The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 119, No. 14 — COPYRIGHT, 1942, BY AMERICAN MEDICAL ASSOCIATION — CHICAGO, ILLINOIS — AUGUST 1, 1942

WHAT'S WRONG WITH MODERN THERAPEUTICS?

CHAIRMAN'S ADDRESS

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Is anything wrong with modern therapeutics; that is, with therapeutics as practiced today? There is no question of a tremendous improvement in methods of treatment since the turn of the century, the result of the remarkable progress made in the so-called medical sciences and the great elevation in standards of medical education. There is, of course, much to be learned, since there are still many diseases the cause and cure of which remain unknown, and improvement in the treatment of many of the other diseases is possible. What I am concerned with now, however, is whether it is not possible to better the work we are doing with the present knowledge we have. Periodic self examination is worth while, even though it exposes defects one may not be proud of. Such examination has revealed many shortcomings, some of which I shall discuss, together with their causes.

In the first place, as to the causes, our interns are thrown early into contact in many hospitals with busy and older practitioners who have developed their idiosyncrasies of therapeutics. Interns often adopt their peculiarities of practice and their pet and often empirical prescriptions, forgetting or abandoning some of the fundamentals of therapeutics they were so carefully taught in medical school. I have often observed interns ordering polypharmaceutic prescriptions that I know they never learned in school. They seem quickly to forget such things as that digitalis should be used only for congestive heart failure and certain arrhythmias and that "tonic" doses are of no value. Usually such things are the result of imitation of the bad practice of older men.

In the second place, practitioners often finally become so busy that they do not keep abreast of therapeutic advances published in good medical journals or do not properly evaluate them and eventually come to rely on advertising matter for their therapeutic knowledge. Fortunately the better pharmaceutic manufacturers are now rather careful about their claims and no great harm is done. However, some preparations are still being recommended for almost every ailment, from athlete's foot to nervous dyspepsia. When one considers the rapid advances in treatment, there is little wonder at the bewilderment of the busy and tired practitioner over conflicting reports and varying opinions. In one issue of a journal one may read of the great value of a treatment, in the next issue of its lack of value. The periodic reviews of the literature on certain diseases or groups of diseases that appear in some journals are excellent for orientating the practitioner, but unfortunately they are often not read by those who need them most. Also the reports of the Council on Pharmacy and Chemistry of the American Medical Association are excellent summaries of the known value of new remedies. Private practitioners should wait for these reviews before using new drugs or new forms of treatment.

In the third place, patients force physicians to prescribe many remedies which they have heard of or read about even though they may not be indicated. This is particularly true of vitamins, endocrine products and so-called tonics. Many of my own patients have asked "Doctor, wouldn't vitamin B help me?" and I must confess that at times I have replied "Possibly; at least it wouldn't hurt you"; usually the patient has decided he would like to try it.

SOME OF OUR SPECIFIC FAILINGS

With regard to the use of those preparations that require laboratory control tests for proper use, such as the sulfonamides, thiocyanate and thyroid, I have found two large schools of practitioners: those who neglect the laboratory controls and those who use them excessively. There is, of course, a smaller middle group who use them properly. With regard to those physicians who neglect to use proper controls, I am not certain whether it is because they do not realize the necessity for them, whether they are trying to save expense for their patients or whether they merely practice medicine in a slovenly manner.

Many prescriptions are still written mainly for placebos. The day of the placebo is past. General intelligence is such that I consider it unfair and improper to present the patient with a prescription for a remedy simply to appease him and delude him into the belief that a mysterious drug or compound will cure him when such is not the case. I do not mean by this that nerve sedatives are taboo. They have a definite and important place in medical practice, but when used they should be proffered as a crutch to tide the patient over a difficult period, and this fact should be frankly explained. Their continued use otherwise is an insult to the intelligence of the patient and an indication that the physician hasn't either the time or the wisdom to treat the patient psychotherapeutically. Frankness is essential in modern medical practice, and far better results are obtained thereby.

Many prescriptions are still written in Latin. Although educated in a period when a great deal of Latin and a modicum at least of Greek were considered

Read before the Section on Experimental Medicine and Therapeutics at the Ninety-Third Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1942.

essential to the preparation for the study of medicine, I believe the day has passed when Latin should be used in prescription writing simply to keep the contents of the prescription a secret from the patient. The patient should know what he is getting. The psychologic value of the mysterious today is not great. For that matter, however, the commonly used chemical names are sufficiently mystifying. To some it no doubt is heresy for me to state my belief that all prescriptions should be written in plain English, and I fear my old Latin teacher, Percival Padgett, is writhing in his grave at this very moment. Furthermore, the names and amounts of simple sedatives and hypnotics should be written on the labels of the containers in order that the patient may be sure what he is taking when he opens the container. It seems senseless to me that boxes and bottles of costly drugs should accumulate in the medicine chest and be of no value later because their contents are unknown. Often drugs are duplicated in this way. At times they may be taken by mistake.

Our double system of weights and measures for prescriptions remains a serious flaw in modern therapeutics. Something must be done about it. Recently a prominent man in my community met death because a prescription written in one system was filled by a "reliable" pharmacist in the other system, and the patient received fifteen times the dose intended. The same remarks apply to the double system of centigrade and fahrenheit methods of recording temperature.

The frequent introduction of some new sedative or hypnotic to swell the already large number of closely related drugs has added confusion but no great harm. Barbital derivatives constitute the large majority of these drugs. An important question is whether physicians are prescribing them too freely. It was certainly an important step forward that was made when restrictions on their use were established. Drugs with such potentialities for harm should certainly not be dispensed except on order of a physician. Such restriction often inconveniences the busy doctor whose patients are forever phoning him for new prescriptions, but the necessity of prescribing anew makes him think of the advisability of allowing the patient to continue the use of the drug indefinitely. There is no question of the great value of these drugs when used to tide the patient over a difficult period.

I have often wondered whether the danger of chronic addiction to these drugs has not been exaggerated. My own experience of their administration to hundreds of patients has revealed very few who have desired to continue their use beyond the time I prescribed. Most of them have themselves discontinued using the drug before I suggested it. As to the question of the increasing use of these drugs for suicidal purposes, that is not so much a problem of the promiscuous prescription of the drugs as it is of the trend of modern living and of our failure to treat potential suicides properly.

In this connection I believe our greatest failure has been in the realm of psychotherapy. Most practitioners appear to be too busy not only to learn this important form of treatment in a scientific way but to practice any but the most desultory form of psychotherapy, depending on the old witch doctor's methods of incantation and mysticism. Hence the multiplicity of sedatives prescribed. Psychoanalysis is out of the question, of course, and perhaps it is just as well; but a form of practical therapeutics, which often is sufficient, could readily be mastered by any intelligent doctor. The day of pure symptomatic treatment has passed. Intelligent explanation combined with the frank and judicious use of drugs should be the order of the day.

Not all the blame for faulty therapeutics can be placed at the physician's door, however. There still remain the dishonest advertising, the well meaning but often erroneous and falsely hope raising newspaper articles and the great amount of self medication. I believe that the advertising of drugs and treatments should be subjected to the severest censorship. I believe that news articles of therapeutic discoveries should be most cautiously portrayed and that news stories of medical subjects should be of the simplest nature. Such reform naturally will be difficult of attainment. As far as self medication is concerned, that also cannot easily be eliminated except by means of public education. Fortunately, today most self medication is relatively harmless except as it may cause delay of proper treatment.

Few realize the extent of self medication. According to *Drug Trade News*, June 2, 1941, of total drug sales for 1940 ($1,612,000,000), only 13.9 per cent of the total drug sales ($225,022,143) were sold on prescription. A somewhat similar percentage holds true for other years. As far as vitamins alone are concerned, however, according to Dr. W. H. Sebrell of the National Institute of Health, about 50 per cent of the retail sales value of vitamin preparations are sold on physicians' prescriptions. According to the same source, the retail sales value of vitamin prescriptions amounted to approximately $50,000,000 in 1937 and $100,000,000 in 1938. It appears that the vitamin business has almost doubled every year since 1937. How much of this expenditure is justified?

The vitamin problem is an important one, since both the profession and the public are being educated to believe that practically everybody suffers from vitamin deficiency. That being the case, vitamin preparations are prescribed for almost every complaint. This is understandable, because patients have so many bizarre and functional complaints, because physicians are taught there are so many cases of subclinical vitamin deficiency and because it is only natural that hope springs eternal for a panacea for all ailments that the human flesh is heir to. Until more definite indications for the use of vitamins are established, we must expect their increasingly inordinate use.

The endocrines are also greatly abused, especially in female patients, for much the same reasons. This abuse will continue until physicians are convinced that there are at present only a few definite indications for their administration.

The use of iron is also overdone, and some physicians are still giving it parenterally. Many expensive combinations of iron, liver and other preparations including vitamins are being prescribed ad libitum and have taken the place of many old fashioned tonics such as elixir of iron, quinine and strychnine. The so-called alteratives, such as potassium iodide, have been practically abandoned except when proper indications exist.

The use of a multiplicity of drugs prevents an appraisal of their use in cases in which a therapeutic test might be of diagnostic value. I have observed that even in a teaching hospital, for instance, both iron and liver have been used from the start in cases of severe anemia in which it was not at once clear whether pernicious anemia or an iron deficiency anemia existed.

I never could understand why so many physicians appear to be wary of treating patients with diabetes

mellitus, since it is such a common disease and we know how to treat it so exactly. Perhaps the fault lies in our teaching. Perhaps we make the subject too complicated; in fact, I believe that we scare our students by individualizing the diets too much, a thing that is desirable, of course, but not necessary. If they understand that the diet formula in all but the mildest cases should be constant from day to day as long as there is no complication and should therefore be measured, the problem of diet is a simple one. If for adults a basic diet is adopted of, say, 225 or 250 Gm. of carbohydrate and 75 Gm. of protein, then the remainder of the calories thought desirable could be made up with fat. After that the number of units of protamine zinc insulin necessary can easily be determined by taking two-thirds the average number of grams of dextrose excreted in the urine in twenty-four hours. Such simple rules will be adequate for the majority of patients, although more exact methods are advisable and easily acquired. One still sees physicians using some oral form of insulin, or using insulin without reference to a measured diet, or making the statement that because a patient has diabetes he is a poor operative risk. Let us hope that these fallacies will eventually die out.

Fads and fallacies in the realm of dietetics are legion. The most common ones are those concerned with weight reduction, hypertension, arthritis and chronic gallbladder disease. Such fads are remnants of old superstitions combined often with the ingenuity of laymen who have something to sell. Weight reduction requires not only a low calory diet of as near normal content as possible with the addition of calcium and the fat soluble vitamins in which such a diet is deficient, but a maintenance diet of relatively low caloric content after the desired amount of weight has been lost. The elimination of red meat from the diet of patients with hypertension not only is not necessary but often makes the patient unhappy. There is no diet that will alleviate the symptoms of nongouty arthritis. The elimination of all foods of high fat content for patients with chronic gallbladder disease is unwise, since uncooked fats, such as butter and cream, are well tolerated and contain the important vitamins A and D.

PHYSICAL THERAPY

A few words concerning physical therapy may be apropos. This important form of therapeutics is slowly coming into its own and is gradually being wrested from the cultists. Even so, many physicians still do not appreciate the importance of physical medicine as a daily therapeutic aid in such conditions as atrophic arthritis and peripheral vascular diseases. With regard to the latter, simple home methods of physical therapy are the most important therapeutic modalities.

THE COST OF THERAPEUTICS

There remains finally the question of the cost of therapeutics to the patient. To consider only one phase, that of drugs, there is great room for improvement. I speak only from a knowledge of what my own patients pay for drugs. The cost of the simplest preparations is often astounding, and I know that many times the cost of the medicine is more than the physician's fee. Here is a sad state of affairs and one that the individual physician is powerless to remedy except so far as he may prescribe the simplest and least expensive preparations of similar action and therapeutic value. No one will gainsay the druggist a fair profit, but patients often wonder if the profit is fair.

CONCLUSION

What's wrong with modern therapeutics goes back to the source of most failures, namely lack of knowledge and the weaknesses of human nature. That being the case, it will be many a day before most of our shortcomings in the field of therapeutics will be remedied. In the meanwhile, more and better education of both medical men and the pubic will shorten the time to the therapeutic millenium.

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EDUCATIONAL NEEDS IN THE FIELD OF INDUSTRIAL HEALTH

WITH EMPHASIS ON MEDICAL POSTGRADUATE INSTRUCTION

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Educational needs in the field of industrial health may be considered from three standpoints: (1) the education of the worker himself with reference to his health, (2) the education of management and labor as to the needs and values of health and medical work in industry and (3) the education of those who render professional services to industry, particularly the medical practitioner or specialist. In this presentation I shall refer only to the last mentioned, with emphasis on postgraduate education.

The Council on Industrial Health of the American Medical Association has expressed its willingness to assist in the development of intensive training in industrial health for full time and part time industrial physicians, through its organization of committees on industrial health in state medical societies. The Council already has acquired information on all major medical agencies interested in employee health and the available facilities for undergraduate and postgraduate industrial medical training in the United States, as well as other data of potential value in an industrial health program as a part of our wartime efforts. Speaking as a member of the Council, which is a standing committee of the Board of Trustees of the American Medical Association, I welcome the cooperation of the Associated State Postgraduate Committees of the State Medical Societies in all matters pertaining to the advance of postgraduate industrial medical education in the United States. I particularly would emphasize the value of cooperative relationships of committees (*a*) on industrial health and (*b*) on postgraduate medical education in the state medical societies.

WARTIME NEEDS

There are approximately fifty million wage earners in the United States. Among these workers it has been found that over four hundred million days are lost yearly on account of absenteeism due to sickness, with a resulting yearly cost of over three billion dollars. We must do everything possible to save this time lost from sickness as a part of our contribution to winning the war. Neither metal nor rubber, money nor manpower but time shows the greatest shortage! Our present needs require a strengthening and broadening of the

Read before the annual meeting of the Associated State Postgraduate Committees of the State Medical Societies, Atlantic City, N. J., June 10, 1942.

entire industrial health program all along the line from private industry to local, state and federal jurisdictions. As emphasized by Surgeon General Parran of the United States Public Health Service, "Industrial hygiene must keep pace with the needs arising from high speed assembly lines, which will employ some fifteen million men and women within the year. Great Britain learned that it is urgently necessary to have the full time services of a trained industrial physician in every large plant. Less than one seventh of our workers have that service now."

As a further indication of the need for promoting more adequate health services for wartime workers is the fact that in 1941 there was a 12 per cent increase in disabling cases of sickness and nonindustrial injuries among male employees of various industries as compared with the mean for the last ten years. Lost time from work on account of sickness, under present conditions, is a potential form of unintentional sabotage. This hidden waste must be brought under better control as a part of our war efforts. As recently stated by Mr. Paul V. McNutt, "Although modern warfare depends on industry just as much as on armed forces, measures to maintain the health and morale of defense workers are far inferior." Moreover, it has been said that, "in time of peace, industrial hygiene is a tool; in time of war, we must make it a weapon!"

One of the chief and immediate needs in connection with the national emergency calls not only for more and better undergraduate instruction in industrial health in our medical schools but also for the organization of short postgraduate courses or institutes in strategic centers throughout the United States. One result of the advance in the development of bureaus of industrial hygiene in state and local governments has been an increased demand for trained personnel which it has been difficult to meet. Many war production industries also are finding it difficult to obtain the services of properly qualified medical personnel. With the practical exhaustion of the supply of competent industrial physicians, we must depend largely on physicians active in community practice.

RECENT DEVELOPMENTS

During the past few years, industry has been making more and more use of medical knowledge and service. Some of the larger companies recently have enlarged their employee health programs; also it is now being recognized that health supervision and medical services for employees of smaller plants and business concerns should be further developed, particularly in war production industries.

One of the most significant recent developments in relation to the organized interest of business management in the health of the worker was the creation of an Advisory Health Committee of the Insurance Department of the Chamber of Commerce of the United States, which held its first meeting in March 1942. This committee will consider the possible development of an industrial health program to be carried on by the chamber in cooperation with affiliated trade associations. It represents a broadening of the health work of the chamber, which for many years has promoted more adequate city and rural health administration through annual interchamber health conservation contests.

Prior to 1936 there were in the United States only five state departments of health and two or three state departments of labor conducting industrial hygiene activities, and even these activities were of limited nature. As of 1942, a total of thirty-six state, four city, two county and two territorial industrial hygiene bureaus have been established, mostly in departments of health.

All these recent developments will require larger numbers of physicians adequately trained for work in the field of industrial health. Many of the state medical societies have been increasing their activities in this direction through the creation of committees on industrial health, which are cooperating closely with the Council on Industrial Health of the American Medical Association.

TEACHING OF INDUSTRIAL HEALTH

As compared with the rapid developments in the organization of industrial medical and health activities in various industries and official departments of health there has been a definite lag in the teaching of industrial health in our educational institutions. In a study[1] which I made in 1934 it was found that only thirteen of eighty-five medical and public health schools in the United States and Canada gave separate courses on industrial hygiene or industrial medicine. Several medical schools included one or two lectures on this subject in their general course on preventive medicine and public health, while a majority of such schools gave no attention whatever to this important and growing subject. Thus a wide range of practice in the teaching of industrial health has been followed among various medical and public health schools. Some advances have been made during the past few years. As indicated by Seeger,[2] a review of this subject by the Council on Industrial Health in 1938 showed that fifty-two medical schools reporting some attention to the subject averaged five hours of instruction on industrial health in their four year curriculums. A more recent study shows a further slight increase in the number of hours devoted to this subject. It is hoped that added impetus will be given by (*a*) the teaching syllabus and (*b*) the recently developed outline on the Teaching of Industrial Health, prepared by the Council. A few medical schools recently have established short courses in industrial health for local community groups. These have been organized either independently by the medical schools or in cooperation with local industries, state bureaus of industrial health and other public agencies.

As of interest in the field of education in industrial health was the creation in 1941 of a joint committee made up of representatives of (*a*) the American Association of Industrial Physicians and Surgeons and (*b*) the Section on Preventive and Industrial Medicine and Public Health of the American Medical Association to consider and possibly to draw up a plan for certifying industrial practitioners. Based on regulations governing the organization of certifying boards already laid down by the Council on Medical Education and Hospitals of the American Medical Association and the Advisory Board for Medical Specialties, it is hoped that eventually an American Board for Industrial Practice may be created and become operative.

The Council on Industrial Health of the American Medical Association recently published a report on the

1. Bristol, L. D.: The Teaching of Industrial Health, J. A. M. A. **102**: 990-995 (March 31) 1934.
2. Seeger, S. J.: Education in Industrial Health, J. A. M. A. **118**: 1017-1019 (March 21) 1942.

Teaching of Industrial Health.[3] This report, prepared jointly by committees representing the American Association of Industrial Physicians and Surgeons and the Council, includes an outline of a course of instruction based on the three major constituents of medical service to employed groups, namely (1) industrial health administration, (2) industrial hygiene and toxicology and (3) industrial medicine and traumatic surgery. This outline, while intended primarily for undergraduate teaching, can be used with suitable modifications for the organization of continuation or postgraduate study either of the introductory or of the refresher type under (*a*) medical society or (*b*) medical school sponsorship or both. The underlying arguments for improved teaching of the essential factors in industrial health have been submitted to the Council on Medical Education and Hospitals, which in turn has acknowledged the urgent necessity for calling existing deficiencies strongly to the attention of medical educators and the profession at large, and for the submission of suitable recommendations aimed at their correction.

POSTGRADUATE INSTRUCTION

A well rounded plan for the teaching of industrial health involves (*a*) medical undergraduate teaching, including required and elective courses, (*b*) postgraduate instruction or continuation study, including opportunities for practicing physicians to attend organized classes or brief refresher courses or institutes, and (*c*) extended graduate study intended particularly to prepare physicians for full time specialty practice in industrial health. While undergraduate teaching and extended graduate study in industrial health are best carried on by university medical departments, postgraduate continuation study lends itself particularly well to the leadership and administration of state, county and local medical societies, with the cooperation of official health agencies. In the further development of adequate medical training in industrial health, priorities should be assigned at this time to postgraduate instruction for practitioners of medicine as an urgently needed wartime program. As far as possible, this should not be allowed to decrease our efforts to provide more and better undergraduate instruction on this subject in our medical schools.

Depending somewhat on the length of time available and on local conditions and facilities, the content of a postgraduate course, continuation study or institute in industrial health should cover (1) employee relations, (2) management relations, (3) medical relations and (4) public health relations. The first two involve the demand or need for industrial health services, the last two the supply of such services. Among the specific subjects which should be included are (*a*) common industrial health problems, including dust hazards, industrial dermatitis and other industrial diseases of local bearing or interest, (*b*) control of tuberculosis, syphilis and other nonoccupational diseases among industrial workers, (*c*) emergency care of major and minor industrial injuries, (*d*) the industrial hygiene survey with demonstrations of methods and apparatus, (*e*) medicolegal aspects of industrial health and (*f*) industrial health and the general practitioner, including methods and procedures regarding administration and physical examinations.

One of the outstanding examples of postgraduate education in industrial health is that which was carried on last year through brief regional institutes in nine Iowa communities, based on cooperative efforts between the state and county medical societies and the state department of health. About twelve hundred physicians attended these institutes, the purpose of which was to stimulate and correlate the interests in industrial medicine of general practitioners, industrial physicians and industrial managers. Details of this successful series of educational institutes on industrial health are given in an editorial of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.[4]

According to recent information supplied by the secretary of the Council on Industrial Health based on a questionnaire to state medical societies, out of thirty-seven states reporting to date, programs of postgraduate education have been developed covering (*a*) industrial medicine and surgery in nine states, (*b*) industrial hygiene and occupational disease control in eleven states, and (*c*) medical organization in industry in seven states. In fourteen states, relationships have been established between state committees on industrial health and committees on postgraduate medical education. Thirteen state societies have sections on industrial health in their scientific assemblies. In nine state societies educational services have been developed through county medical societies, and in ten states such educational services have been organized through state medical journals. Ten state societies have arranged for exhibit material on industrial health at their annual meetings, and in seventeen states papers on industrial health subjects are included in current programs of state medical society meetings. From these figures it is evident that in the United States we at present are doing very much less than we might be doing in postgraduate medical education in industrial health. May we not accept this as a challenge to greater efforts and accomplishment in this important field so vital to winning the war!

Quoting the federal director of Defense Health and Welfare Services, "Of all defense health and welfare services, industrial hygiene can make—must make—the most direct contribution to winning the war. As in modern warfare, the strategy of industrial health service is team work." It would seem logical, therefore, to do everything possible better to prepare medical students and practitioners of medicine for leadership in industrial health through more adequate undergraduate and postgraduate instruction. Our objectives in the teaching of industrial health may best be attained through active team work of medical schools and organized medical societies, particularly of postgraduate and industrial health committees of the latter, in cooperation with the Council on Medical Education and Hospitals and the Council on Industrial Health of the American Medical Association and the Associated State Postgraduate Committees of the state medical societies. A 33 per cent or even a 50 per cent performance in any field is not conducive to winning this war. Immediate steps should be taken to stimulate and implement a complete, well integrated program of postgraduate medical education on industrial health at a high administrative level.

195 Broadway.

3. Report of Council on Industrial Health: The Teaching of Industrial Health, J. A. M. A. **118:** 731-733 (Feb. 28) 1942.

4. Postgraduate Education in Industrial Health, editorial, J. A. M. A. **118:** 622-623 (Feb. 21) 1942.

BASAL TEMPERATURE VERSUS BASAL METABOLISM

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Basal temperature is defined here as the body temperature taken under conditions which are usually considered as necessary for determining basal metabolism. That is to say, the individual should have had a good night's rest, no food for twelve hours and no exercise or excitement. Unless the patient is in the hospital or the test is run in the home a true basal metabolic rate is not obtained, for the exercise of dressing and going to the laboratory will have an appreciable influence on the oxidative rate. The half hour or hour rest is a poor compromise for basal conditions. This is not the most serious criticism of the determinations of basal metabolism, however. Many more errors are made when the patient is unable to relax because of nervous tension. Although the normal person would not be excited by such an examination, the person needing such a test is not normal and many of them are unable to relax after repeated tests. A single example will illustrate what has repeatedly been observed:

A freshman from the School of Commerce had been referred by the personnel office because of a failure in English and insubordination to one of the teachers. His physical examination and subnormal temperature left no doubt that his metabolism should be subnormal. During his first test it was obvious that he was not relaxed, although he did not move and the curve was fairly smooth. At the end of this test he was assured that the machine would not bite and was then told a funny story. A hearty laugh helped him to relax, and a second test was run within five minutes. The result of the original test figured + 16 per cent and that of the second one — 24 per cent.

This is the most extreme case yet encountered but illustrates what happens repeatedly in the basal metabolism determination.

Thus, nervous tension will also elevate the body temperature, as illustrated by the following case:

A football player suspected of having hypothyroidism took his temperature before getting out of bed and found it to be 96.1 F. While he was resting in the laboratory for his metabolism test, a thermometer was again placed in his mouth for ten minutes and it registered 96.4 F. A five minute metabolism test was run and the temperature again taken. It was 96.9 F. Thus without any exercise the excitement of the metabolism test was sufficient to raise the temperature 0.5 degree. The temperature at the end of the metabolism test was 0.8 degree higher than under basal conditions before arising.

It has been known for many years that the basal metabolic rate goes up as the body temperature rises. Hence it seems obvious that the result of this metabolism test was higher than it should have been, although it was found to be —18 per cent.

Because of these objections a search has been made for many years for a more accurate method of determining thyroid function. The blood cholesterol has been extensively used by some investigators but has been found useless in the present study. Since most of the present observations were carried out on college students, the failure of a correlation between metabolic rate and cholesterol content of the blood may be due to the age of the patient. Further work would be necessary to prove this point. The pulse rate has been suggested by some authors, but in college students many rapid pulses have slowed down on thyroid therapy. No single symptom has been found which would apply to every person with low metabolism. Some have fatigue, some have cutaneous disorders, some have dry skin, some have nervousness, some have menstrual difficulties, some have dry hair and some have other symptoms, but none of these signs could be considered reliable in all cases.

In over 1,000 cases in which the basal metabolic rate has been found subnormal, the body temperature has never been found up to normal unless an infection was present. Often at the time of physical examination these highly excited patients may have oral temperatures of 99.0 to 99.2 F. These patients, however, will tell you that their temperatures are usually subnormal and subsequent visits to the office, when they are not excited, confirm their reports. Thyroid therapy in this large group of cases of subnormal metabolic rates has without exception led to an elevation in body temperature. These clinical observations merely confirm what has been known experimentally for many years. The cretin rabbit, produced by total thyroidectomy, has a subnormal body temperature. The temperature goes up as thyroid is administered, and if the dosage is excessive the temperature goes above normal. That a similar effect is produced in the human being is illustrated by the following case:

A physician's daughter was placed on a reducing diet for obesity and given 2 grains (0.13 Gm.) of thyroid daily for a subnormal basal metabolic rate and a low temperature. Two grains was adequate to maintain a normal temperature. She foolishly thought she would hasten the loss of weight and for two weeks took 7 grains (0.45 Gm.) of thyroid daily. (She gained 2 pounds [0.9 Kg.].) The typical symptoms of hyperthyroidism developed, and her temperature was 0.6 degree above normal. Her symptoms and elevated temperature promptly subsided when the dose was reduced to 2 grains.

It is well established clinically that the hyperthyroid patient has an elevated body temperature. Thus it appears from the experimental data and from clinical observations that body temperature might serve as an index of thyroid activity in hypothyroidsm.

There is considerable disagreement in the literature as to whether all patients with low metabolic rates are hypothyroid. There is no doubt that starvation will lower the metabolic rate. This must be taken into consideration when malnutrition is so prevalent even in our own country. The extreme effect of starvation on metabolism is illustrated by Benedict's patient,[1] who fasted thirty-one days. The metabolism fell 30 per cent. It is interesting to note that the body temperature remained relatively constant during this entire period. Hence it seems that body temperature might well distinguish between cases of inanition and those of true hypothyroidism. Other instances in which the metabolic rate goes down have not been followed, but at present it seems that the body temperature can be safely used.

The present group includes some patients with neurasthenia, chronic nervous exhaustion, arthritis and other diseases which are not generally considered to occur with hypothyroidism. The initial low temperature and the improvement seen when the temperature is elevated by thyroid therapy indicate that further work should be done in this field. No attempt will be made at present to decide whether or not these patients are

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1. Du Bois, E. F.: Basal Metabolism in Health and Disease, Philadelphia, Lea & Febiger, 1927.

hypothyroid. Very few patients with subnormal temperature fail to respond to thyroid therapy, both as to relief of symptoms and as to elevation in temperatures. Kleitman's observations [2] that efficiency parallels diurnal variations in body temperature indicate that further studies should be done in this field. Preliminary observations indicate that the person with subnormal body temperature is perceptibly improved in his performance, whether in industry, in the class-room or on the athletic field, by bringing his body temperature up to normal.

Another group of cases in which body temperature would be useful is illustrated by the following:

A woman aged 22 had been very nervous and underweight for several years. She suffered from palpitation of the heart, had a pulse rate of 110, blood pressure of 155 systolic and 100 diastolic, a fine tremor of the hands and hyperactive reflexes. Prior to entrance in the university her basal metabolic rate was + 18 per cent, and she had been advised to have a thyroidectomy. She had refused the operation. Her body temperature was 97.6 F. The basal metabolic rate was found to be + 8 per cent. The curve was smooth, but observations during the test left no doubt that she was not relaxed. She was given phenobarbital, ½ grain (0.03 Gm.) three times a day for one week and the metabolic rate was then found to be — 8 per cent. She was started on thyroid therapy ½ grain daily and seen at weekly intervals. The dose was gradually increased to 2 grains (0.13 Gm.) daily. Over a period of sixty days the blood pressure gradually fell to 115 systolic and 85 diastolic, the pulse rate came down to 84 and the hyperactive reflexes became normal. The body temperature gradually rose. The nervousness and tremor of the hands improved.

The therapeutic results would leave no doubt in the mind of the physician or the patient that what had appeared to be a classic hyperthyroid syndrome was in reality hypothyroid in causation. The body temperature was the only criterion on which a correct diagnosis might have been made.

That such cases are not rare is indicated by 6 additional cases that I have observed during the past twelve months. In 5 of these an operation had been performed, and the subsequent history left no doubt of a mistaken diagnosis. In the other case, operation was delayed by a consultant surgeon who preferred to wait a year if possible because of the patient's age. The high metabolic rate observed in each case can be explained on the basis of nervous tension and inability to relax. The rapid pulse can be explained in some cases by a tendency for the circulation to collapse as a result of fatigue or exhaustion. The extreme of this is seen in surgical shock, in which circulatory collapse occurs resulting in the rapid, feeble pulse. In some cases the extreme nervousness resulting from chronic fatigue gives an elevated pulse rate and a pseudohypertension similar to that seen in the case illustrated. The low body temperature is incompatible with hyperthyroidism experimentally or clinically, and hence its use would have avoided the wrong diagnosis, the operation and the resultant aggravation of symptoms.

No serious objection to the use of body temperature as an indication for thyroid dosage has been raised in numerous conferences with competent physicians and physiologists. It seems unlikely that one could do damage to the heart or other organs with thyroid unless the body temperature goes above normal. However, no patients with organic heart disease have been treated in spite of subnormal body temperatures, since the circulation load in hypothyroidism is definitely lighter than in the normal person. This well known fact has led to total thyroidectomy for conjestive heart failure. Hence it seems unwise to increase the load of a damaged organ. No evidence has been encountered, however, to indicate that the normal heart is damaged by raising the body temperature to normal. On the other hand, the benefits derived by normal circulation seem to outweigh any theoretic damage to the normal heart.

The procedure followed at present for the diagnosis of subnormal body temperature is as follows: The patient places a thermometer and book by his bedside. When he awakens in the morning the thermometer is left in the mouth without interruption for ten minutes by the clock (the use of the book is obvious). It will be found that in the absence of a cold or other infection the daily variation in one's temperature is comparatively slight. The menstrual cycle causes about 1 degree variation with the low point at the time of ovulation and a gradual rise to a peak occurring a day or two before menstruation.[3] It will be necessary to determine the basal temperature in a large number of cases before setting a standard. Hence the tentative standard set here may be modified slightly by more data, but it will serve as a safe working range for the present. It is based on observations on patients without symptoms as well as on patients with symptoms which were relieved by adequate doses of thyroid over long periods. For the male the basal temperature seems to be near 98.0 F. For the female the average for the entire period has been found to be about 98.0 F. with the low point at the time of ovulation at 97.5 and the peak near 98.5.

When the subnormal temperature is elevated with thyroid therapy, few unpleasant symptoms are experienced if the dosage is increased gradually. It has been found that most patients will tolerate 1 grain (0.065 Gm.) of U. S. P. thyroid [4] as an initial dose. The entire dose is taken at breakfast time solely to form the habit and avoid divided doses later in the day. The initial dose is continued for four weeks and the basal temperature rechecked for two or three mornings. If the temperature is still subnormal, the dosage is raised 1 grain and continued for another four weeks. The basal temperature is again checked and a third grain added if necessary. This is the maximum dose used in this series of 1,000 patients, and the majority have had normal temperatures within six months. Patients will be encountered requiring more, but if the dose is raised gradually, as here outlined, and the temperature followed closely at monthly intervals, probably no great harm will be done. The patient usually asks how long he must continue therapy. It is significant that the first patient given thyroid began in 1891 and stopped in 1919, when she died at the age of 74. (It is also historically noteworthy that Dr. Murray [5] observed in this case a subnormal temperature of 95.6 to 97.2 F. and that on thyroid therapy the temperature rose to 98.2.) The medication can be stopped when the patient's requirement is reduced to meet the capacity of his own thyroid gland. There is a gradual reduction in requirement with advancing years. A safe procedure would seem to be to continue the dosage required to maintain a normal temperature for one year. An attempt might then be made to decrease the dose by 1 grain for sixty days. By this time the gland should pick up the defi-

2. Kleitman, Nathaniel: Sleep and Wakefulness, Chicago, University of Chicago Press, 1939.

3. Rubenstein, B. B.: The Relation of Cyclic Change in Human Vaginal Smears to Body Temperatures and Basal Metabolic Rates, Am. J. Physiol. **119**: 635 (July) 1937.

4. Armour's has been used exclusively in this series.

5. Murray, G. R.: The Life History of the First Case of Myxedema Treated by Thyroid Extract, Brit. M. J. **1**: 359 (March 13) 1920.

ciency if it is capable of meeting the emergency. If the temperature is found subnormal at that time and symptoms have recurred, it would seem worth while continuing the former dose for another year. Yearly reduction of 1 grain under these circumstances should avoid any unpleasant reactions. It is well to advise the patient on his first visit at the time he is concerned about his symptoms that his medication may have to be continued for many years. Otherwise he is likely to improve, become careless about taking his thyroid and develop new symptoms different from those previously experienced, and as a result he may change physicians. It is well to have the patient report his basal temperature, at least by telephone, once each month; by so doing he is far more likely to continue his therapy. The physician likewise is reassured that the dosage is not excessive. The routine taking of temperatures in an active practice reveals many that are subnormal. The etiology of this large group is now under investigation, and apparently a simple explanation can account for them.

SUMMARY

1. From a study of over 1,000 cases the results indicate that subnormal body temperature is a better index for thyroid therapy than the basal metabolic rate.

2. The differential diagnosis between hypothyroidism and hyperthyroidism is sometimes difficult. In 7 cases reported the diagnosis was wrong, in 5 of which an operation had been performed. The temperature was subnormal in each case.

REPORT ON ACUTE ILLNESS AMONG RURAL MATTRESS MAKERS USING LOW GRADE, STAINED COTTON

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AND

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This report deals with an acute illness among workers in rural mattress making projects using low grade cotton. The history of the outbreaks of illness, distribution of cases, estimated number of persons involved, nature of the illness and description of the investigations undertaken to determine the cause of the illness are presented.

Numerous reports of sudden outbreaks of acute illness occurring among workers on rural mattress making projects were received by the U. S. Public Health Service throughout the period from March to December 1941. Outbreaks of a similar illness were also reported in one cotton mill and in several cottonseed processing plants. Illness invariably followed the use of a very low grade, dusty, stained cotton of the 1940 crop.

The rural mattress making projects, sponsored by the U. S. Department of Agriculture, were part of a program designed to reduce the cotton surplus and to benefit farm families. Rural families in the low income groups who wished to make mattresses for home use were supplied with 50 pounds of cotton and 10 yards of cotton ticking for each mattress. Participating families in a community made their mattresses cooperatively at the same work center. Contact with the cotton was limited to the time allowed each family to make its quota of mattresses.

The mattress making procedure involved opening bales, fluffing or carding the cotton, filling and closing the mattresses and beating the mattresses to secure uniformity of surface. All of these operations were extremely dusty when the low grade, stained cotton was used. Illness occurred among workers exposed to high dust concentrations, and the severity of the illness varied with the degree of exposure.

Illness began from one to six hours after work was begun. Initial symptoms were fatigue and generalized aches, followed by anorexia, headache, nausea and vomiting, the latter lasting six to nine hours in some cases. About six hours after exposure a sense of chilliness supervened, followed usually by frank chills, fever and headache. In several patients an oral temperature in excess of 102 F. was noted. Anorexia and nausea extended beyond the acute phase. Fatigue and generalized aches lasted from forty-eight hours to four or five days. Many complained of abdominal pain or cramps and of substernal discomfort or pressure, varying in intensity and duration, so that the person was unable to take a deep breath. Neither age nor sex seemed to influence the incidence of the disease.

These mattress making projects have been in operation since February 1940, but no outbreak of illness was reported prior to March 1941. According to information supplied by Mrs. Ola Powell Malcolm of the extension service of the U. S. Department of Agriculture, there were 2,832,885 families engaged on rural mattress making projects in forty-six states during 1941. During the years 1940 and 1941 a total of 3,944,456 mattresses and 1,119,376 comforters, using 500,000 bales of cotton, were made in rural mattress making centers. Twenty-five states reported scattered outbreaks of illness in the course of these projects. The actual number of cases of this illness occurring during the year 1941 cannot be determined. However, it is known that there were many more than 700 cases in one state alone.

On receipt of the first reports of illness all state health departments were requested to submit (*a*) reports on cases of illness among workers in low grade cotton, (*b*) samples of cotton incriminated in the outbreak and whenever possible (*c*) nose and throat swabs and blood specimens for examination. The majority of the mattress making projects were located in relatively inaccessible rural districts, so that it was impossible to obtain the desired information and samples immediately after the occurrence of an outbreak. It was recommended to officials of the U. S. Department of Agriculture that gauze masks be worn by persons exposed to the cotton dust until the low grade, stained cotton could be replaced. Outbreaks of illness did not occur among workers when these recommendations were adopted.

INVESTIGATION INTO CAUSE OF OUTBREAKS

The following samples of cotton and cotton dust were received from thirteen states:

Fifty-eight samples of low grade cotton collected from projects in the course of which illnesses had been reported.

From the Division of Industrial Hygiene, National Institute of Health.

A. R. Monaco and S. W. Jones acted as controls in the human exposure experiments; J. W. Long and R. W. Kolb cooperated in the bacteriologic and serologic studies; J. W. Crosson of the West Virginia State Department of Health and officials of other state health departments and the U. S. Department of Agriculture assisted in obtaining epidemiologic data. R. W. Webb and H. C. Slade of the Agricultural Marketing Administration, U. S. Department of Agriculture, classified the cotton samples implicated in outbreaks of illness and supplied various grades of cotton for comparative purposes.

Three control samples, two of which were high grade, normal cotton and the third a much lower grade specifically reported not to have caused illness.

Six samples of dust, two of which were collected in a cotton mill in which cases of acute illness had occurred following the use of stained cotton.

Intensive laboratory investigation of these samples included physical, chemical, mycologic, bacteriologic, serologic and biologic examinations.

PHYSICAL EXAMINATION OF COTTON SAMPLES

All the samples of low grade cotton ranged from a light yellow to a dirty brown and contained varying amounts of plant débris. Handling the samples produced a cloud of dust.

The majority of these samples were classified within official grades for tinged and stained cotton by graders of the U. S. Department of Agriculture. Many of these samples were described as bolly.[1] The samples of low grade cotton reported to have caused illness will be referred to hereafter as "stained" cotton.

Two of the control samples of normal cotton were white and free of foreign matter; the third contained numerous particles of plant débris. None of these control samples were noticeably dusty when fluffed. These samples will be referred to as "normal" cotton.

The crystallographic microscope was used to make a search for particulate matter under mountants of different indexes of refraction, i. e. water, glycerin and piperine. The particulate material was small in amount and apparently of organic rather than of inorganic nature.

CHEMICAL EXAMINATION OF COTTON SAMPLES[2]

Several possible sources of chemical toxicity were considered, namely insecticide contamination, and various fractions of the cotton as protein, lipoid (particularly gossypol) and histamine.

Insecticide Contamination.—A sufficient number of samples of stained cotton were examined to warrant the statement that the illness caused by this cotton was not due to insecticides or to toxic gases.

Presence of Toxic Fractions in Cotton.—The toxicity of aqueous, isotonic sodium chloride and ether extracts from several 10 Gm. samples of stained cotton and normal cotton was determined by intraperitoneal injection of 2 cc. of each extract into experimental animals. No abnormalities were noted following these injections. After two weeks had elapsed the experiments were repeated to see whether sensitization had occurred. The results were negative.

Nitrogen determinations were made on aqueous, isotonic sodium chloride and organic solvent extracts of stained cotton that had caused illness and of normal cotton that had not caused illness. The nitrogen content of the extracts of stained cotton was about ten times that of the normal cotton.

Examination of a 100 Gm. sample of the stained cotton for histamine, with the method described by Prausnitz,[3] was negative as far as could be judged by the ordinary laboratory procedures and in direct comparison with known quantities of histamine. It should be pointed out, however, that in the experimental work described by Prausnitz large amounts of cotton dust were used, whereas in the experiments previously indicated the raw cotton was used because large amounts of cotton dust were not available.

Ultraviolet absorption spectrums of ether extracts of equal quantities of stained cotton, sterilized stained cotton and normal cotton were obtained by P. A. Cole of this laboratory. Selective absorption in the range of 2,600-2,900 angstroms was demonstrated in the case of extracts of stained cotton and sterilized stained cotton, but not in the case of extracts of the normal cotton. The selective absorption of the sterilized, stained cotton was about one half that of the unsterilized stained cotton.

MYCOLOGIC EXAMINATION OF COTTON SAMPLES

Because of the discoloration of the cotton, its moldy odor and the temperature and humidity incident to storage conditions, it was suspected that molds pathogenic for human beings might be present.

All samples of stained cotton submitted were examined for molds, and representative cultures were submitted to senior mycologist C. W. Emmons, Division of Infectious Diseases, National Institute of Health, for tentative identification. He reported various strains of Alternaria, Mucor, Rhizopus, Fusarium, Sporotrichum

Fig. 1.—Micro-organisms within stained cotton fiber, Gram's stain.

and Aspergillus niger. Coccidioides was not found. Charles A. Thom, principal mycologist, Bureau of Plant Industry, U. S. Department of Agriculture, reported the presence of strains of Alternaria and Cladosporium, Aspergillus and Pencillium in samples of stained cotton implicated in the outbreaks of sickness. He did not find Aspergillus fumigatus. Dr. Thom and Dr. Emmons expressed the opinion that the low incidence of fungi and the infrequent occurrence of pathogenic types of fungi would preclude this class of micro-organisms as the causative agents of this unnamed illness.

BACTERIOLOGIC AND SEROLOGIC STUDIES

A microscopic examination of fibers of the stained cotton in moist preparations demonstrated the presence of micro-organisms in mucilaginous clumps along the sides of the individual cotton fibers.

Fibers of stained and of normal cotton were stained by Gram's method and mounted in balsam. Microscopic examination demonstrated that the fibers of stained cotton were thin walled and contained many short, rod-shaped bacteria within the lumen, whereas the fibers of normal cotton were thick walled and free of bacteria.

The stained preparations of cotton fibers were also examined by E. E. Berkley, cotton technologist, Bureau of Plant Industry and Agricultural Marketing Administration, U. S. Department of Agriculture. He concurred in the opinion that the stained bodies or cells, considered to be micro-organisms, were definitely within

1. United States Department of Agriculture, Bureau of Agricultural Economics: The Classification of Cotton, miscellaneous publication 310, Washington, D. C., May 1938.
2. The chemical investigations were performed by L. T. Fairhall, S. W. Jones and E. D. Palmes of this laboratory.
3. Prausnitz, Carl: Investigations on Respiratory Dust Disease in Operatives in the Cotton Industry, report issued by the Medical Research Council, Special Report Series, 212, London, 1936.

the lumen of the fiber and were not a part of the fiber wall structure.

A quantitative bacteriologic examination was made of all samples of cotton and cotton materials received for investigation. Potato-carrot-dextrose agar [4] was employed as the plating medium. The plates from all samples of stained cotton showed a heavy growth of

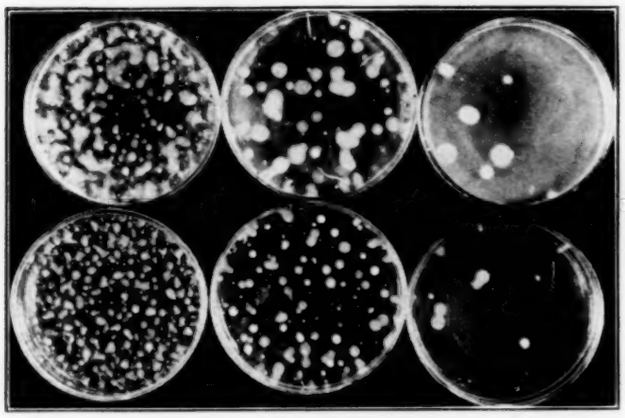

Fig. 2.—Incidence of mucoid bacterium in dilutions of 1: 1,000,000 (at left), 1: 10,000,000 (in center) and 1: 100,000,000 (at right) from two samples of stained cotton (sample 1, top row; sample 2, bottom row).

large, mucoid, spreading colonies, colorless to pale yellow. This medium was fermented with a yeasty odor, and gas was produced by subsurface colonies. Microscopic examination of isolated colonies showed a gram-negative rod averaging 2 microns by 0.7 micron, heavily encapsulated and having 1 to 4 polar flagella. The organisms were actively motile in hanging drop preparations.

This organism was found in stained cotton in numbers varying from three million to well over a billion per gram of sample. The plate counts on the 58 samples of stained cotton averaged 840,000,000 per gram of sample. This organism occurred to the exclusion of any significant numbers of other types of organisms. Figure 2 shows the incidence of this micro-organism on potato-carrot agar plates from high dilutions of 2 samples of stained cotton.

The mucoid organism was not recovered from the control samples. The plate counts of miscellaneous micro-organisms on the 2 high grade control samples were 13,000 and 110,000 per gram respectively. The low grade control sample showed a plate count of 79,000,000 miscellaneous organisms per gram. According to the U. S. Department of Agriculture,[5] three million organisms per gram of cotton is the maximum plate count to be expected from normal cotton. Prindle [6] has reported that numbers of bacteria in raw cotton range from one million to one hundred million per gram.

Figure 3 shows the incidence of miscellaneous bacteria on potato-carrot agar plates from low dilutions of 2 samples of normal cotton.

Two samples of dust from a cotton mill in which several cases of illness had occurred revealed the incidence of the mucoid organisms to be 1 billion 200 million and 16 billion organisms per gram. The 4 samples of dust from North Carolina cotton mills in which this unnamed illness had not been reported but in which cases of mill fever had occurred did not show an incidence of the mucoid organism in excess of 1 million per gram.

The examination of a sample of cotton collected in 1938 from a cotton mill in which an outbreak of "mill fever" [7] had occurred revealed that this cotton, three years after collection, contained this micro-organism in excess of 3 million per gram of cotton.

In order to determine the distribution of the mucoid organisms in different types of cotton, 17 samples, representing practically all grades of white, tinged and yellow stained cotton, were obtained from the U. S. Department of Agriculture. The presence of the mucoid bacterium was demonstrated in all grades of yellow stained cotton and in only 1 sample of low grade, tinged cotton. The incidence of this micro-organism ranged from 5 thousand to 670 million per gram. It has not been demonstrated in any of the grades of white cotton or in the better grades of tinged cotton examined. The results of these examinations indicate a possible wide distribution of the mucoid bacterium in low grade, tinged and yellow stained types of cotton.

The biochemical reactions were determined on representative cultures from each sample of cotton and cotton dust examined. Cultures of the mucoid micro-organism which gave identical biochemical reactions were isolated from 54 of the 58 stained cotton samples and from all the 6 samples of dust. On the basis of its morphologic characteristics and its ability to ferment sugars, this micro-organism may be tentatively placed in the genus Aerobacter. This micro-organism will be referred to in this paper as the "cotton bacterium."

The cotton bacterium was never isolated from blood cultures obtained from persons who had contracted this illness nor from nose and throat swab cultures except in a limited number of cases in which the swabs were taken during or immediately after the illness.

It was thought that the cotton bacterium might be pathogenic for cotton plants. However, infection of cotton seedlings [8] could not be induced. The organism could not be recovered from the leaves of seedlings

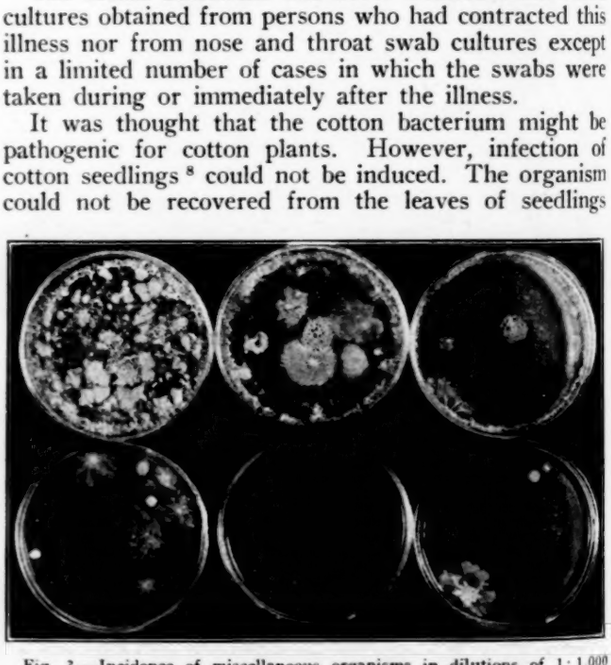

Fig. 3.—Incidence of miscellaneous organisms in dilutions of 1: 1,000 (at left), 1: 10,000 (in center) and 1: 100,000 (at right) from two samples of normal cotton (sample 1, top row; sample 2, bottom row).

a month after inoculation. It was recovered from top soil three months after inoculation.

A series of experiments was carried out in animals to ascertain the pathogenicity of the cotton bacterium

4. Formula: Potatoes 2,000 Gm., carrots 500 Gm., dextrose 200 Gm., magnesium sulfate 3 Gm., calcium carbonate 2 Gm., agar-agar 150 Gm. and water 10 liters; p_H adjusted to 6.8.

5. United States Department of Agriculture: Personal communication to the authors.

6. Prindle, B.: The Microbiology of Textile Fibers: I. Cotton Fiber, Textile Research (Boston) **4**: 413-428 (July), 463-478 (Aug.), 555-569 (Oct.), **5**: 11-31 (Nov.) 1934.

7. Trice, M. F.: Cardroom Fever, Textile World J. **90**: 68 (March) 1940.

8. Cotton seed free of micro-organisms was kindly supplied by Richard Weindling of the U. S. Bureau of Plant Industry, Clemson College, Clemson, S. C.

and the toxicity of filtrates obtained from broth cultures of this organism and from saline extracts of stained cotton.

Berkefeld filtrates of seven day tryptose broth cultures of the cotton bacterium and of a saline extract of stained cotton were injected intravenously into rabbits. One to 2 cc. of these filtrates was the minimum quantity required to kill 1.5 to 2 Kg. rabbits. The intravenous injection of much larger quantities of filtrates from saline extracts of normal cotton and of sterile tryptose broth caused no toxic manifestations in rabbits.

Intranasal application of the cotton bacterium in several species of animals did not produce any ill effects. The subcutaneous injection of the cotton bacterium in rabbits caused abscess formation from which the cotton bacterium was isolated. Massive doses of cotton bacterium cultures and culture filtrates were required to kill mice and guinea pigs when injected intraperitoneally.

The Dolman [9] and Hammon [10] tests for enterotoxin were employed for testing Berkefeld filtrates of saline extracts of stained cotton and of seven day tryptose broth cultures of the cotton bacterium.

These tests demonstrated that filtrates of these substances contained heat stable, toxic material capable of inducing vomiting and diarrhea in cats. Similar filtrates of saline extracts of normal cotton gave negative results.

An extensive series of Shwartzman [11] tests was employed to determine whether or not a local cutaneous reactivity would be produced by the toxic substances liberated by the cotton bacterium.

The materials tested included heated and unheated Berkefeld filtrates from tryptose broth cultures of the cotton bacterium, heated and unheated filtrates from saline extracts of stained cotton and filtrates from saline extracts of normal cotton. Sterile tryptose broth and sterile isotonic solution of sodium chloride were employed as control solutions. A typical positive Shwartzman reaction is shown in figure 4.

These experiments revealed the following: (*a*) A heat stable endotoxin-like substance is liberated by the mucoid cotton bacterium; (*b*) a similar toxic substance is present in filtrates from saline extracts of stained cotton incriminated in outbreaks of illness; (*c*) this endotoxic substance is not present in filtrates from saline extracts of normal cotton. It was also demonstrated by the Shwartzman reaction that homologous immune serums prepared through rabbit immunization with cultures of the mucoid cotton bacterium and with filtrates from saline extracts of stained cotton contained antibodies capable of neutralizing the endotoxin-like substance present in these materials.

Agglutination and precipitation tests were employed to determine whether antibodies were present in human or animal serums in response to the introduction into the body of the viable or killed cultures of the cotton bacterium, filtrates of broth cultures (endotoxin) of the bacterium and filtrates from saline extracts of stained cotton.

The serums tested were as follows: (*a*) human serums obtained from persons in several states who had had acute illness twenty-four hours to several weeks prior to the time the serums were obtained; (*b*) serums obtained from 4 baboons at known intervals after a seven hour exposure to stained cotton; (*c*) serums obtained from rabbits given repeated intravenous injections of saline suspensions of viable and killed organisms, Berkefeld filtrates from twenty-four and forty-eight hour and seven day tryptose broth cultures of these micro-organisms and filtrates of saline extracts of stained cotton; (*d*) control serums obtained from persons not known to have had the illness, from 1 baboon not exposed to stained cotton, from a rabbit injected with a filtrate of a saline extract of normal cotton and from a normal noninjected rabbit.

The antigen used for agglutination tests consisted of a filtered uniform saline suspension of eighteen to twenty-four hour potato-carrot agar slant cultures of the bacterium isolated from cotton samples which had been implicated in outbreaks of the acute illness.

All human serums, including the controls, and all baboon serums contained low titer agglutinins for the cotton bacterium. The explanation for this fact is unknown. However, it would seem to indicate that because the cotton bacterium is closely related to certain types of bacteria commonly found in the intestinal tract of primates it may be agglutinated by their antibodies. It would also indicate that an increased production of antibodies in the blood is not stimulated by exposure to the cotton bacterium under the conditions described herein. No significant decrease in the titer of human or of baboon serums was observed.

Fig. 4.—Necrotic areas denote positive Shwartzman reactions produced by Berkefeld filtrates from forty-eight hour and seven day tryptose broth cultures of the cotton bacterium.

Identical antibodies were produced in rabbit blood by all saline suspensions of viable and killed organisms, by Berkefeld filtrates from twenty-four and forty-eight hour and seven day tryptose broth cultures and by filtrates from saline extracts of stained cotton. No agglutinins for the cotton bacterium were produced by those rabbits injected with filtrates of saline extracts of normal cotton, nor were such agglutinins present in the blood serum of normal, nonimmunized rabbits. There was a tendency for the titer of the serum to decrease gradually with increasing length of time after the last injection of the antigen. These rabbit immune serums were utilized to separate the cultures isolated from the cotton samples into a number of serologic groups. The majority of the cultures fell within the same serologic group.

Although the cotton bacterium is of the same general morphologic type as Proteus vulgaris (strain X 19), a serologic relationship could not be demonstrated between the two organisms.

Two precipitinogens were used in the precipitation tests. One was prepared from an eighteen hour tryptose broth culture of the cotton bacterium by Lancefield's [12]

9. Dolman, C. E.; Wilson, R. J., and Cockcroft, W. H.: A New Method of Detecting Staphylococcus Enterotoxin, Canad. Pub. Health J. **27**: 489-493 (Oct.) 1936.

10. Hammon, W. McD.: Staphylococcus Enterotoxin: An Improved Cat Test, Chemical and Immunological Studies, Am. J. Pub. Health **31**: 1191-1198 (Nov.) 1941.

11. Shwartzman, Gregory: Phenomenon of Local Tissue Reactivity and Its Immunological, Pathological and Clinical Significance, New York, Harper & Brothers, 1937.

12. Lancefield, R. C.: A Serological Differentiation of Human and Other Groups of Hemolytic Streptococci, J. Exper. Med. **57**: 571-595 (April) 1933.

method; the other was prepared from an isotonic sodium chloride extract of stained cotton by filtration through a Berkefeld N candle and concentration by vacuum distillation at 30 to 32 C.

Most of the human serums, including the controls, gave positive precipitation tests in low dilutions with both precipitinogens. Rabbit serums from normal non-immunized animals and from the animal injected with filtrates from a saline extract of normal cotton did not show any significant precipitin titer. All other rabbit serums gave positive precipitation tests with both precipitinogens. These precipitation tests indicated that the stained cotton contained an extractable substance which is precipitated by serums from rabbits immunized with the cotton bacterium.

ANIMAL EXPERIMENTS

Hamsters, guinea pigs, rabbits, kittens, monkeys and baboons were exposed to various cotton dusts. Cotton

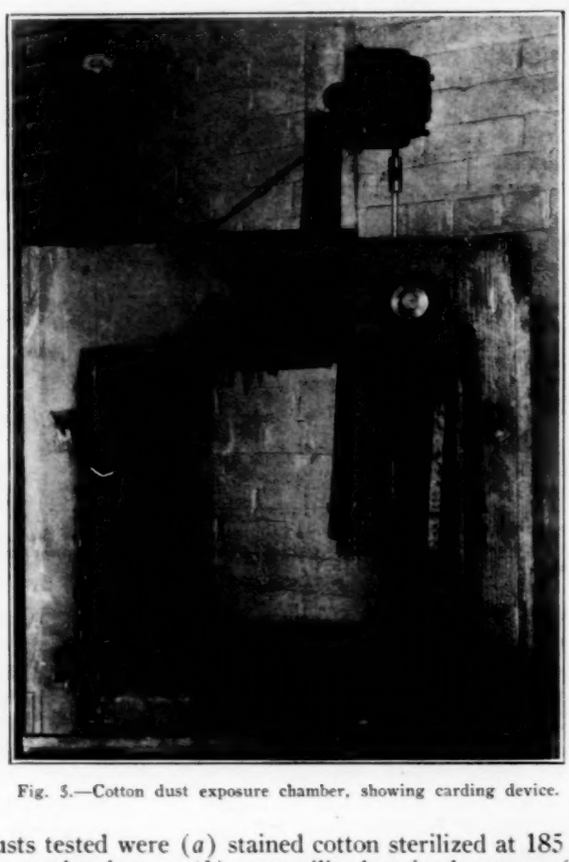

Fig. 5.—Cotton dust exposure chamber, showing carding device.

dusts tested were (*a*) stained cotton sterilized at 185 C. for twelve hours, (*b*) unsterilized stained cotton, (*c*) unsterilized normal cotton, (*d*) normal cotton contaminated with a seven day tryptose broth culture and with a twenty-four hour tryptose broth culture of the cotton bacterium. The presence or absence of the cotton bacterium was determined in all cotton samples before use for animal exposure.

Exposure Apparatus.—All animals were exposed in 2 foot square compartments constructed with windows on two sides to facilitate observation of the test animals. Each compartment was fitted with a cylindric 0.25 inch mesh wire cage 16 inches high with an electrically motor driven propeller suspended in the center. Each cage was filled with the cotton material being tested about five times during the exposure period. This crude carding device saturated the atmosphere with cotton dust. The exposure compartments are illustrated in figure 5.

All animals were carefully examined and observed, prior to, during and after the exposure period. Records were kept as to the weight, temperature, pulse rate, respiratory rate and other physical signs. All animals were usually exposed for a continuous period of seven hours.

Eight guinea pigs and 3 rabbits were exposed to dust from stained cotton for seven hour periods over a period of five days. Fifteen additional rabbits were exposed to stained cotton dust for two and one-half days. Irritation of the mucous membranes in guinea pigs was evidenced by nose pawing immediately after they were placed in the exposure chamber. In none of the animals did any symptoms of illness develop and all were in good condition a month after the experiment.

Monkeys.[13]—Four monkeys were given a seven hour inhalation exposure, i. e. 1 monkey to each type of cotton. In none of these animals did any definite symptoms of illness develop. The same 4 monkeys were reexposed to the same materials on two other occasions at intervals of twelve days. In none of the animals did symptoms develop on reexposure.

Baboons.—Four baboons were given a seven hour inhalation exposure, i. e. 1 baboon to each type of cotton. One nonexposed baboon was retained as a control. Three of the exposed baboons did not show any abnormal symptoms. The baboon that was exposed to untreated stained cotton exhibited some degree of discomfort as if experiencing difficulty in breathing. Its breath sounds were somewhat harsh. Increasing symptoms of illness developed and the animal died five days after exposure. The gross autopsy findings were essentially negative. However, the microscopic examination indicated that the animal died from bronchial pneumonia. Cultures obtained from the nose, trachea, heart and intestine at autopsy were negative for the cotton bacterium.

In a second series of similar baboon exposure experiments 2 baboons used in the first test and 1 new animal were exposed to unsterilized stained cotton dust. The fourth baboon was reexposed to normal cotton dust which had been contaminated with a seven day tryptose broth culture of the cotton bacterium. The fifth animal was again retained as a control. Two of the baboons that were exposed to the unsterilized stained cotton exhibited definite symptoms of illness during the last two hours of the exposure period. These symptoms were irregular respiration, difficulty in breathing, listlessness and indifference to food. However, all symptoms subsided within a few hours after the termination of exposure. The other animals employed in this test failed to show any symptoms of illness.

Kittens and Hamsters.—Four kittens and 8 hamsters were exposed for seven hours to each of the four types of cotton respectively. One nonexposed kitten was retained as a control. None of these animals exhibited any abnormalities either during or after exposure to any of the types of cotton tested. The gross autopsy findings and cultures taken at autopsy from those killed by chloroform were essentially negative.

Summary.—Five baboons, 4 kittens, 30 hamsters, 8 guinea pigs, 4 monkeys and 18 rabbits were exposed to various types of cotton dusts for one or more seven hour periods. In 3 of the baboons exposed to unsterilized stained cotton mild symptoms of the disease

13. F. W. von Oettingen, D. D. Donahue and J. W. Dronenburg of this laboratory carried out the exposure studies with monkeys and rabbits.

developed. None of the other animals exhibited any symptoms. It must be concluded, from the results of all animal exposure tests, that none of the common experimental animals are very susceptible to this unnamed illness.

HUMAN EXPERIMENTS

The foregoing bacteriologic and serologic studies indicated that a short, gram-negative, rod shaped bacterium, or its products, isolated from stained cotton was the agent probably responsible for the illness under study. Since it could not be definitely produced in any of the species of laboratory animals tested, human exposure experiments were undertaken.

Cotton Material Tested.—This consisted of (*a*) normal cotton free from the cotton bacterium, (*b*) normal cotton contaminated with a saline suspension of a twenty-four hour potato-carrot agar slant culture of the cotton bacterium (1 million per gram of cotton) and a Berkefeld filtrate from a seven day tryptose broth culture of the same organism, (*c*) stained cotton sterilized at 175 to 180 C. for two hours on two successive days, (*d*) unsterilized stained cotton containing 800 million of the cotton bacterium per gram of cotton, (*e*) filtrate from a seven day tryptose broth culture of the cotton bacterium and (*f*) sterile tryptose broth. The presence or absence of the mucoid cotton bacterium was determined in all cotton samples before use for human exposure.

Exposure Apparatus.—Human inhalation experiments were carried out in the compartments described under animal exposure experiments (fig. 5).

Three test subjects (A, B and C) were exposed for ten minutes to each type of cotton dust during these studies. Two control subjects (D and E) were exposed to normal cotton dust for ten minutes on every occasion when the test subjects were exposed to other types of cotton. A week or more was allowed between the exposures to each type of cotton material. Prior to each exposure the subjects were given a complete physical examination which included roentgenograms of the chest, a complete blood picture and urinalysis. Nose and throat cultures were taken before and after each exposure. Records were kept of the temperature, pulse rate, respiratory rate, changes in blood picture and development of symptoms in each person during each exposure experiment, and each person was examined by a physician following each exposure and at intervals throughout each experiment.[14]

Exposure to Normal Cotton.—The 3 test subjects did not show any signs or symptoms after exposure to normal cotton. The 2 control subjects, who were repeatedly exposed to normal cotton dust under the same conditions, showed no signs or symptoms incident to such exposure.

Exposure to Sterilized Stained Cotton.—There were no abnormal signs or symptoms during the exposure except slight irritation of the mucous membranes of the eyes and nose. Swab cultures taken from the nose and throat of all 3 persons were negative for the cotton bacterium immediately after this exposure. Eight hours after the exposure A complained of slight headache, slight generalized aches, some cough and some tightness of the chest. B had no symptoms other than a slight dryness of the throat. C complained of slight headache, generalized aches, weakness, dizziness and cough (table 1). All symptoms had disappeared twenty-four hours after exposure. It is thought that these mild symptoms were due to minute quantities of the heat stable endotoxin which were not destroyed by sterilization. The oral temperatures, the pulse rates, the total leukocyte counts and differential counts were normal throughout this period.

Exposure to Contaminated Normal Cotton.—A, B and C were exposed to normal cotton contaminated with pure cultures of the cotton bacterium and its toxic filtrates. During the exposure there were no symptoms other than irritation of the mucous membranes of the

TABLE 1.—*Symptoms of Experimental Illness in Order of Frequency and Intensity* *

Symptoms	Exposure to Sterilized Stained Cotton — Test Subjects			Exposure to Contaminated Normal Cotton — Test Subjects			Exposure to Stained Cotton — Test Subjects			Exposure to Toxic Culture Filtrates — Test Subject
	A	B	C	A	B	C	A	B	C	B
Headache	+	..	+	++	++	+	+	+++	+++	++
Cough	+	..	+	++	+	+	++	+	++	+
Generalized aches	+	..	..	++	++	++	++	++	+++	+++
Dryness of throat	..	+	+	+	++	++	++	+	..	..
Joint pains	+	..	..	+	++	..	+++	++	++	+++
Tightness of chest	+	..	..	+	++	+++	++	+	..	..
Weakness	..	..	++	..	++	++	..	+++	+++	+++
Drowsiness	..	..	+	..	++	+	++	..	++	+++
Muscle pain	..	..	..	..	++	..	+++	+++	++	+++
Chills	..	..	..	++	..	..	+++	..	+++	+++
Conjunctival irritation	..	..	..	..	++	+	..	+	++	..
Hot sensation of face	..	..	..	..	+	+	+	+	..	++
Fatigue	..	..	..	..	++	++	..	+++	..	+++
Nausea	..	..	..	..	..	..	++	+	++	+++
Dyspnea	..	..	..	..	..	+	..	+	++	++
Irritability	..	..	..	..	++	+	..	++	..	++
Brassy voice	..	..	..	..	..	..	+	+	+	..
Sneezing	..	..	..	+	+	..	..	+	..	+
Insomnia	..	..	..	..	..	..	++	++	..	..
Vertigo	..	..	..	..	..	..	..	++	++	..
Bad taste in mouth	..	..	..	..	..	..	++	..	++	..
Anorexia	..	..	..	..	..	..	++	..	+	..
Burning urination	..	..	..	..	..	..	..	+	++	..
Nervousness	..	..	..	..	..	++	..	..	++	++
Palpitation	..	..	..	..	..	+	..	..	++	..
Muscle tremor	..	..	..	..	..	..	+++	..	..	..
Abdominal discomfort	..	..	..	..	..	..	..	++	..	++
Increased sweating	..	..	..	..	..	..	..	..	++	++
Frequent urination	..	..	..	..	..	..	..	+	..	..

* No symptoms of illness developed in the test subjects after exposure to normal cotton dust or in the control subjects after repeated exposures to normal cotton dust.

14. R. F. Sievers and E. C. Thompson of this division performed the physical examinations and the hematologic determinations respectively.

eyes and throat. Swab cultures taken from the nose and throat before exposure were negative, but similar cultures taken immediately after exposure revealed the presence of the cotton bacterium (fig. 6). Symptoms of illness in the 3 persons began two to three hours after exposure. These symptoms were approximately the same in all 3, varying somewhat in intensity (table 1).

Before After

Fig. 6.—Nose and throat swab cultures before and after exposure to stained cotton dust.

There was a slight elevation of temperature and an increase in pulse rate beginning within four to seven hours after exposure and lasting about eight hours in all 3 cases. A significant leukocytosis, characterized by an increase in segmented cells and bands, developed within five and one-half hours after exposure (table 2). Within thirty hours after exposure the total leukocyte count had returned to normal. Other than these conditions, the physical examinations of all 3 subjects were essentially negative. The test subjects were asymptomatic and normal within twenty-four to forty-eight hours after the exposure. Roentgenograms of the chest after exposure were negative in all 3 cases.

Exposure to Stained Cotton.—During this exposure the 3 subjects experienced decided irritation of the mucous membranes of the eyes, nose and throat. Swab cultures taken from the nose and throat of each subject immediately preceding the exposure did not show the presence of the cotton bacterium, but similar cultures taken immediately after the exposure were heavily contaminated with the organism (fig. 6). This contamination persisted for twenty-four hours in the case of B, while cultures from the other 2 subjects were negative at this time.

The same symptoms of illness as those noted after exposure to contaminated normal cotton began in all 3 subjects within one and one-half hours after exposure. However, the symptoms were much more severe, as will be noted in table 1, and each subject complained of nausea. Within three to four hours after exposure in all 3 cases there was an increase in pulse rate and pronounced leukocytosis (table 2). Within five hours after exposure A's temperature had increased from 36.7 C. to 39.3 C. (98.1 to 102.7 F.), B's from 37.2 C. to 38.4 C. (98.9 to 101.1 F.) and (C's from 37.1 C. to 38.5 C. (98.7 to 101.3 F.). Twelve hours after exposure the temperatures and pulse rates had returned to normal. All 3 cases showed an increase in bands and segmented cells. The leukocyte counts gradually returned to normal within thirty to fifty hours.

Exposure to Berkefeld Filtrate of Seven Day Tryptose Broth Culture of the Cotton Bacterium.—B was exposed for one minute to a fine mist of a sterile Berkefeld filtrate from a seven day tryptose broth culture of the cotton bacterium several weeks after exposure to the stained cotton dust. Symptoms of illness began within forty-five minutes. Signs and symptoms were identical in type, severity and duration with those noted after exposure to the dust from stained cotton. As a control test, A, B, C and E were exposed for one minute to a fine mist of sterile tryptose broth [15] of the same type as that employed for toxin production by the cotton bacterium. This exposure did not produce any signs or symptoms of illness.

Physical findings other than those already described remained normal in all the human subjects. There were no changes in the erythrocyte counts, hemoglobin values, urinary findings and roentgenograms of the chest, nor was there evidence of any sequelae.

Five cases of illness have occurred in this laboratory following accidental exposure to the cotton dust or to spray mists from broth cultures of the cotton bacterium. The symptoms were the same as those already described. The cotton bacterium was isolated from the respiratory tracts in 2 of the cases.

Patch Tests.—All the materials noted were used in patch tests on A, B and D before and on A, B, C, D and E after the inhalation experiments. No significant positive reactions resulted.

Intradermal Injections.—One-tenth cc. of the following materials was injected intradermally into the forearms of subjects A, B, C, D and E: (1) filtrate from seven day tryptose broth culture of the cotton bacterium, (2) filtrate from saline extract of stained cotton, (3) filtrate from saline extract of normal cotton, (4) sterile tryptose broth and (5) sterile isotonic solution of sodium chloride. All tests were observed at least twice a day for a period of four days.

TABLE 2.—*Changes in Leukocyte Counts During Experimental Illness*

Test Material	Test Subject	Leukocyte Count Before Exposure	Leukocyte Count (Hours After Exposure)
Contaminated normal cotton	A	6,100	14,400 (5½)
	B	10,000	13,800 (6)
	C	9,200	15,400 (5½)
Stained cotton	A	7,900	20,200 (3½)
	B	7,800	20,000 (4½)
	C	9,400	21,600 (4)
Culture filtrate	B	8,800	19,600 (5½)

Berkefeld filtrates from broth cultures of the cotton bacterium and from the saline extract of stained cotton caused severe cutaneous reactions and systemic symptoms within three hours in the subjects who had been exposed to normal cotton dust, as well as in the 3 who had experienced attacks of illness. These reactions were characterized by severe erythematous swelling which was extremely painful on pressure and varied

15. Formula: Bacto-tryptose 20 Gm., Bacto-dextrose 2 Gm., sodium chloride 5 mg., disodium phosphate 2.5 Gm., distilled water 1,000 cc. Autoclave twenty minutes at 15 pounds pressure. Final p_H is ± 7.3.

in size from 5 by 5 cm. to 15 by 7 cm. All subjects except D complained of headache and generalized muscular pains within about ten hours; B, C and E had a severe lymphangitis and lymphadenitis of the arm lasting about thirty hours. All evidence of the injections disappeared within four days. It is to be noted that subject E, who had not had the illness, showed as severe a reaction as did subjects A, B and C. The nature of the cutaneous reactions denoted a definite intoxication rather than a sensitization to the substances injected. None of the 5 subjects had any significant reaction at the site of the intradermal injections of sterile tryptose broth, sterile isotonic solution of sodium chloride or the filtrate from the saline extract of the normal cotton.

It is evident that the illness following these exposures was caused by the cotton bacterium or its products. The symptoms of this illness were similar to those reported in outbreaks of illness occurring in rural mattress making centers, one cotton mill and three cottonseed plants in which stained cotton was processed.

COMMENT

The subjective symptoms encountered in acute illness among rural mattress makers except for much greater severity are almost identical with those of the so-called mill fever and Monday fever found in cotton mill workers.[16] These diseases follow the inhalation of dusty cotton. According to the literature, cotton mill workers, while engaged in the initial stages of cotton processing, are subject to frequent illness due to a special and complex cause which has not been completely elucidated but which has been considered to be both allergic and mechanical.

The Departmental Committee on Dust in Cardrooms in the Cotton Industry in 1932[17] reported that the symptoms of the illness among cotton cardroom operatives were due to the action of the dust on the mucous membranes of the respiratory passages. According to this report, there was no evidence of aspergillosis or other similar disease of the lung due to inhalation of fungus mycelia, conidia or spores. The committee reported the presence of large numbers of gram-negative bacilli in the cotton dust. However, no importance was attributed to these bacteria, since no factor common to the bacteriology of the dust and the patients' sputum was found. In an appendix to this report,[17] Maitland and his associates reported the presence of histamine in cotton dust and suggested the possibility of histamine being a causative factor in cotton mill illness.

The desirability of following up this clue led the Medical Research Council of Great Britain to institute a study of illness in cotton mills. The results of this investigation are given in the report by Prausnitz.[3] He concluded that histamine, although present in cotton dust, was not the cause of the illness. On the basis of particle size determinations and animal experiments with cotton dust, however, Prausnitz formulated the following conception of the pathogenesis of the cotton mill illness: "1. Irritating soluble proteins of the cotton dust penetrate into the alveolar tissue and gradually produce thickening of the alveolar walls. 2. Simultaneously, or perhaps even before that, supersensitiveness is acquired. 3. Superficial irritation of the bronchial mucous membrane by the dust leads to chronic bronchitis, cough . . . and ultimately to emphysema." [3]

In connection with this illness among cotton card room operatives, the British Parliament in 1940[18] passed "an Act to provide for the payment of compensation . . . by employers of male workmen who are certified . . . to have been employed for periods amounting in the aggregate to not less than twenty years in cotton card rooms or other specified parts of factories engaged in the spinning of raw cotton, and to have died from, or become totally and permanently incapacitated for work as the result of, the respiratory disease known as byssinosis."

From the results of the work in this laboratory it seems logical to assume that the cotton bacterium or its toxin, responsible for illness among rural mattress makers, may also be the etiologic agent responsible for illness among cotton mill workers. As far as can be determined, there is no permanent pulmonary injury following several attacks of the illness as it occurred in this laboratory. However, if a person had repeated attacks of this illness over a period of years, there is a possibility that permanent pulmonary changes would occur.

The illness among rural mattress makers also resembles heckling fever, reported in workers inhaling flax dust, mill fever in workers inhaling jute dust, and grain fever in workers inhaling grain dust. It is possible that these diseases may be caused by the cotton bacterium or a related species of organism.

Further studies on the relationship of the cotton bacterium to Monday fever and to byssinosis, on the normal habitat and distribution of the cotton bacterium, its development on cotton, on the isolation and identification of the endotoxin and on methods for the protection of workers are needed. This is especially true in view of the fact that reports of outbreaks of illness in the upholstering industry and in cottonseed processing plants are being received continually. Other reports dealing with the technical phases of this investigation are being prepared for publication.

SUMMARY

This report deals with an acute illness occurring among workers in rural mattress making projects, in a cotton mill and in cottonseed processing plants in which the workers were exposed to high concentrations of stained cotton dust. Hundreds of cases of this illness occurred during the spring and summer of 1941. Outbreaks of this disease ceased when protective respiratory apparatus was used by the workers or when the use of the low grade, stained, dusty cotton was discontinued. Reports of outbreaks of this illness are being continually received from upholstering and cottonseed processing plants in which stained cotton is used.

Fifty-eight samples of stained cotton known to have caused illness, 3 control samples of cotton not known to have caused illness and 6 samples of dust from cotton mills in which illness had occurred were submitted to physical, chemical, mycologic, bacteriologic, serologic and biologic studies.

All samples of cotton incriminated in outbreaks of illness consisted of low grade, dusty, stained cotton. Chemical examination of the samples did not reveal any

16. Collis, E. L.: Investigation into Present Health of Cardroom Strippers and Grinders, in the Annual Report of the Chief Inspector of Factories for 1908, London, pp. 203-205; Industrial Pneumoconioses with Special Reference to Dust Phthisis, Milroy Lectures, 1915, Public Health **28**: 252-263 (Aug.) 1915. Prausnitz.[3] Report of Departmental Committee.[17] Trice.[7]

17. Report of the Departmental Committee on Dust in Cardrooms in the Cotton Industry, Great Britain Home Office, London, 1932.

18. Workmen's Compensation and Benefit (Byssinosis) Act, 1940: Workmen's Compensation Acts, 1925 to 1940, Acts of Parliament, Ch. 56, 3 and 4, Geo. 6, 1940.

chemical substance capable of producing the disease. The low incidence of fungi and the infrequent occurrence of pathogenic types of fungi precluded this class of micro-organisms as the cause of the illness.

Bacteriologic examination of all samples of stained cotton and stained cotton dust known to have caused illness revealed an incidence of gram-negative, rod shaped bacteria ranging from 3 million to more than 10 billion per gram. These organisms occurred to the exclusion of any significant numbers of other types of bacteria on potato-carrot-dextrose agar. The micro-organism could be demonstrated on the outside of and within the lumen of individual cotton fibers. This organism was not recovered from the high grade or normal cotton. The characteristics of this organism tentatively place it in the genus Aerobacter.

The bacteriologic examination of 17 additional control samples representing practically all grades of cotton did not reveal the cotton bacterium in the various grades of white cotton. However, the cotton bacterium was recovered from all grades of yellow stained cotton and from one grade of tinged cotton.

Positive Shwartzman, Dolman and Hammon tests demonstrated the presence of a toxic substance in filtrates of extracts of the stained cotton and in filtrates of broth cultures of the organism isolated from it. Serologic studies demonstrated that homologous antibodies could be produced in rabbits through injection with cultures and culture filtrates of the cotton bacterium and with filtrates from extracts of stained cotton. A significant antibody titer could not be demonstrated in the blood serum from human beings and animals exposed to stained cotton under the conditions described herein.

Six species of experimental animals exposed by inhalation to stained cotton dust for several daily seven hour periods did not develop any significant symptoms of illness. The micro-organism had a low pathogenicity for experimental animals.

The same type of disabling illness was produced experimentally in human beings by inhalation of (*a*) dust from normal cotton contaminated with the cotton bacterium and its culture filtrates, (*b*) dust from stained cotton containing a high incidence of the cotton bacterium and (*c*) a fine mist of a sterile filtrate from cultures of the cotton bacterium. Similar exposures of persons to dust from normal cotton and to a mist of sterile tryptose broth failed to produce any signs or symptoms of illness.

The cotton bacterium was recovered from nose and throat swabs only in a limited number of cases. Blood cultures were negative in all cases.

Intradermal injections of the filtrates of stained cotton extracts and culture filtrates of the cotton bacterium in man were primarily toxic, producing severe, inflammatory lesions. Patch tests with various cotton samples and with chemical fractions of these samples were negative.

The clinical manifestations developed experimentally in human beings were the same as those reported in rural mattress makers and in workers in a cotton mill and in cottonseed processing plants. The clinical syndrome of this illness is similar to that of an acute intoxication.

This illness is characterized by its sudden onset, one and one-half to three hours after exposure, and its short duration, i. e. twenty-four to forty-eight hours. The subjective symptoms are headache, cough, generalized aches, dryness of the throat, joint pains, tightness of the chest, weakness, drowsiness, chills, conjunctival irritation, fatigue, nausea, vomiting, diarrhea, dyspnea, irritability, brassy voice, sneezing, insomnia, vertigo, anorexia, burning on urination, nervousness, palpitation, muscle tremor and abdominal discomfort. These subjective symptoms are accompanied by an elevation of temperature, increased pulse rate and sudden high leukocytosis, with a moderate increase in band and segmented cells.

This illness resembles mill fever, Monday fever and gin fever in cotton mill workers. It is possible that the cotton bacterium or its toxic products may be responsible for these diseases. It is also possible that repeated exposure over a period of years to this organism or its products contained in cotton dust may be a contributing factor in byssinosis.

CONCLUSIONS

The acute illness among rural mattress makers is caused by the inhalation of a gram-negative, rod shaped micro-organism or its products contained in or on dust from stained cotton. The severity of the symptoms and physical manifestations in this illness are dependent on the presence and concentration of the cotton bacterium or its products in the cotton dust inhaled and on the duration of exposure.

OBSTETRIC SIGNIFICANCE OF BARBITURATES AND VITAMIN K

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It is well known that various types of hemorrhage in the newborn account for a considerable percentage of stillbirths and neonatal deaths. Bundesen and others [1] reported that there were 237 deaths from intracranial hemorrhage among 2,260 neonatal deaths in 1936 and 1937. In an endeavor to decrease the percentage of stillbirths and to decrease mortality and maldevelopment in the newborn, we have studied the effect of vitamin K administered in various ways to women in labor or administered directly to the newborn.

In a previous article [2] we reviewed the history of vitamin K and appended an extensive bibliography. The cases cited in that article are included in this report. The methods of determining the prothrombin were the same for the whole series, namely a modification of the Smith bedside technic for determinations on maternal and cord blood and the micro method of Kato and Poncher for determinations on infants' blood obtained by heel puncture.

One hundred and fifty-seven women had prothrombin determinations made during labor. The average

All the vitamin K used in this study was furnished by the Abbott Laboratories, North Chicago, Ill.

From the Department of Obstetrics, Cook County Hospital, and the Department of Obstetrics and Gynecology, Northwestern University Medical School.

This study was made possible by a grant for technical assistance arranged by Dr. Herman N. Bundesen, president of the Board of Health of Chicago.

1. Bundesen, H. N.; Fishbein, W. I.; Dahms, O. A.; Potter, Edith L., and Volke, Walter: Factors in Neonatal Deaths, J. A. M. A. **111:** 134-141 (July 9) 1938.

2. Fitzgerald, J. E., and Webster, Augusta: Effect of Vitamin K Administered to Patients in Labor, Am. J. Obst. & Gynec. **40:** 413-421 (Sept.) 1940.

was 97.1 per cent of normal. The same 157 mothers had determinations done at the time of delivery. The average then was 96.7 per cent of normal; so it is apparent that labor has no influence on the maternal prothrombin.

The average prothrombin of the babies of these 157 mothers was 130.6 per cent of the adult normal. The determinations were all done on cord blood by the technic used on the maternal blood. The comparative elevation in the cord blood prothrombin was noted in each group discussed in this article (chart 1).

Three hundred mothers were then given vitamin K orally with 10 grains (0.6 Gm.) of bile salts during labor. Of these, 88 were given a vitamin K concentrate (from alfalfa) in peanut oil (klotogen) in doses of 4,000 Almquist units, and 212 were given the synthetic product menadione (2-methyl-1, 4-naphthoquinone) in doses of 8 mg., 41 in a compressed tablet and 171 in sesame oil in a gelatin perle. The type of medication made no difference in the results. The maternal prothrombin on entrance averaged 98.3 per cent of normal. The average maternal prothrombin at delivery was 114.3 per cent, showing a definite rise for the treated patients. The time of administration varied from fifteen minutes to twenty-seven hours before delivery. The maternal prothrombin seemed to be definitely affected even if the medication was given shortly before delivery, since to 28 women the drug was given one hour or less before delivery and the prothrombin still averaged 110.3 per cent. To 9 of these women the medication was given thirty minutes or less before delivery, and the prothrombin was 100 per cent of normal, indicating that such late oral administration is without value. The prothrombin time for 12 patients to whom the vitamin was given from fourteen to twenty-seven hours before delivery averaged 110.2 per cent, showing that there is a prolonged effect.

The average cord blood prothrombin for the babies whose mothers received oral medication averaged 161.4 per cent, showing a percentage gain of 23.5 as compared with the value for the babies whose mothers were untreated.

Two hundred and twenty-four mothers were then given the synthetic vitamin K 2-methyl-1, 4-naphthohydroquinone-3 sodium sulfonate in doses of 3.2 mg., equivalent to 2 mg. of menadione, during labor. Of these, 72 received the vitamin intramuscularly and 152 intravenously. For the group receiving the vitamin intramuscularly, the prothrombin averaged 95.8 per cent before medication and 112.4 per cent at delivery. For those receiving the vitamin intravenously it averaged 97.4 per cent on entrance and 115 per cent at delivery. The time of administration varied from fifteen minutes to twenty-four hours before delivery. With this type of administration, late medication was even more effective. For 22 mothers given the vitamin fifteen to thirty minutes before delivery, the prothrombin at delivery averaged 110.7 per cent, and the rise was maintained in patients treated twelve to twenty-four hours before delivery. The babies of these mothers showed a uniformly high cord blood prothrombin content. The prothrombin of the babies whose mothers were given the preparation intramuscularly averaged 158.6 per cent, and that of the babies whose mothers were treated intravenously averaged 160 per cent.

Forty-three mothers to whom 7½ grains (0.5 Gm.) of sodium pentobarbital orally or 1 Gm. of sodium amyl bromoallyl barbiturate rectally was given as a first stage analgesic were then studied. Before the administration of the drug the prothrombin averaged 97 per cent of normal. At delivery the maternal prothrombin averaged 84.5 per cent, showing a definite decrease in the blood coagulability in patients so treated.

The babies of these 43 mothers showed an average prothrombin of 90 per cent, a level considerably below that of babies whose mothers had had no such medication.

Twenty-two mothers given these barbiturates as analgesics were also given vitamin K while in labor. On entrance the prothrombin of these mothers averaged 96.8 per cent of normal, and at delivery it averaged 106 per cent of normal, suggesting that the drop in prothrombin content due to barbiturates can be prevented by the use of vitamin K during labor.

The babies of these mothers showed an average cord blood prothrombin of 140 per cent, which is about the reading for babies whose mothers had no medication at all and a striking increase over the reading for babies whose mothers had the barbiturates without vitamin K.

The effect of barbiturates on postpartum women was then investigated. One hundred and one women had prothrombin determinations after delivery. The aver-

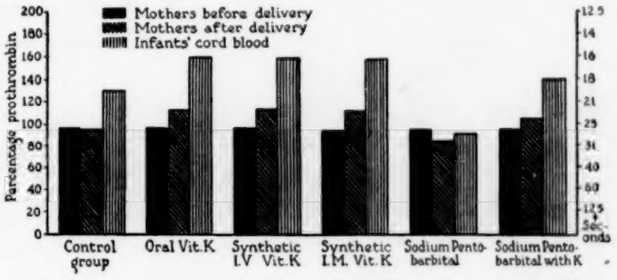

Chart 1.—Average prothrombin readings in each group studied.

age value was 98.9 per cent of normal. These women were given 3 grains (0.18 Gm.) of sodium pentobarbital on their first postpartum night, and their prothrombin levels were checked the next morning, when the average had fallen to 87.8 per cent. A similar group of 64 averaged 98.5 per cent at delivery and were given 6 grains (0.36 Gm.) of sodium pentobarbital their first postpartum night. The next morning their average prothrombin was 84.7 per cent of normal. Thus, three separate groups of women were treated with barbiturates. Each group showed approximately the same prothrombin level before medication, and each group showed a definite decrease in the prothrombin level a few hours after medication. The infants born to mothers of one of these groups showed a striking decrease in cord blood prothrombin when compared with babies born to mothers who did not receive barbiturates.

We then studied the prothrombin curve of babies of various groups for six days after birth. The first day readings for all these babies differed decidedly from the cord blood readings. This difference may be accounted for by three factors: 1. The determinations were made on heel blood drawn about twelve hours after birth. 2. The determinations were all done by the micro method of Kato and Poncher instead of by the modification of the Smith bedside technic used on the mothers' blood and on the cord blood. 3. The blood used in the

micro method must be oxalated before the determination is made, while in the macro method whole untreated blood is used.

To establish a daily normal for babies by the micro method of Kato and Poncher, the blood of 50 babies was checked at the end of each of the first six days of life by this method. The average for the six days was 73.8, 59.1, 59.5, 67.3, 75.0 and 78.9 per cent (chart 2).

For 32 babies whose mothers had vitamin K orally the average was 87.7, 89.3, 87.8, 94.0, 94.7 and 99.8 per cent.

For 54 babies whose mothers had synthetic vitamin K intravenously or intramuscularly the average was 86.5, 84.7, 91.5, 94.1, 98.7 and 103.6 per cent.

For 28 babies whose mothers had barbiturate analgesics with no other medication the average was 53.1, 38.6, 38.0, 51.4, 72.1 and 75.0 per cent (chart 3).

For 12 babies of mothers who had barbiturate analgesics but who were also given vitamin K during labor the average was 86.4, 87.6, 91.4, 95.4, 98.0 and 101.0 per cent.

Many observers have noted that the prothrombin of infants drops from the second day of life until the fifth or sixth, when it gradually becomes normal. Our figures tend to bear out their observations. It is also generally known that true hemorrhagic disease of the newborn begins during this period. Many milder forms of this tendency may occur and be unrecognized during the same time. Under these circumstances it may seem wise to prevent the lowering of the prothrombin, since this can be accomplished easily by the administration of vitamin K to the mother up to a short time before delivery. This procedure seems even more reasonable in cases in which the mother has been given sodium pentobarbital as an analgesic when the prothrombin of the mother and of the baby at delivery are depressed and the prothrombin of the baby after birth remains strikingly below that of a baby whose mother has had no such analgesic.

In an effort to discover whether we could prevent the neonatal decrease in prothrombin in cases in which the mother has not been given vitamin K during labor, we gave 50 babies of such mothers 1 mg. of synthetic vitamin K intramuscularly during the first day of life. Daily readings were made for six days by the micro method of Kato and Poncher, the first reading being made before the baby was given the vitamin. The daily averages were 75 (before), 95.4, 96.3, 102.0, 103.7 and 106.3 per cent, which shows rather conclusively that the drop in prothrombin of such infants can be prevented by intramuscular injection of vitamin K after birth (chart 4).

The neonatal drop in the prothrombin is more striking than the figures alone show. Three babies of untreated mothers were dropped from the control series because of clinical evidence of bleeding plus a low prothrombin, which made immediate administration of vitamin K seem necessary. One of these had coffee ground vomitus on the second day, and the prothrombin was 56 per cent. Vitamin K was administered to the baby, and the next day the prothrombin was 87 per cent and the symptoms had disappeared. The other 2 had continuous bleeding from the heel puncture, 1 on the third day, with a prothrombin of 15 per cent, and the other on the fourth day, with a prothrombin of 19 per cent. Vitamin K was administered, and the next day the symptoms subsided and the prothrombin had risen to 80 per cent and 87 per cent, respectively.

Of 30 control babies of mothers who had barbiturates for analgesia, 5 were withdrawn on various days because of hematoma and continuous oozing at the site of the heel puncture. The mothers of 4 of these had received sodium pentobarbital and the mother of 1 had received sodium amyl bromoallyl barbiturate. All these babies improved promptly after the administration of vitamin K, the prothrombin rose rapidly and the rise was maintained.

Seven other babies were called to our attention because of bleeding. These infants were not included in the series originally. All were babies of untreated mothers, and the prothrombin was not determined until after the onset of symptoms. One baby on the third day was bleeding from the nostrils and had subconjunctival hemorrhages, coarse tremor of the extremities and severe cyanosis of the face. There was no clot in five minutes. The diagnosis made by the department of pediatrics was hemorrhagic disease of the newborn with possible cerebral hemorrhage. One milligram of synthetic vitamin K was given to the baby intramuscularly, and one hour and fifteen minutes later the clotting time was one and one-half minutes (prothrombin percentage, about 20), but the nasal hemorrhage was not

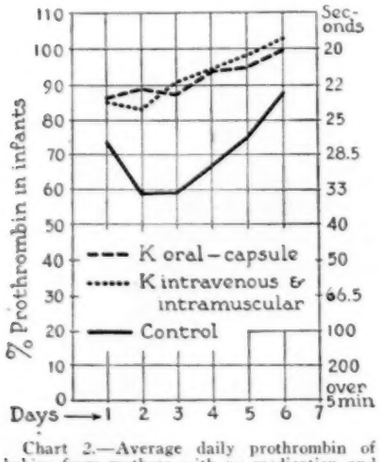

Chart 2.—Average daily prothrombin of babies from mothers with no medication and from mothers who had vitamin K orally or parenterally.

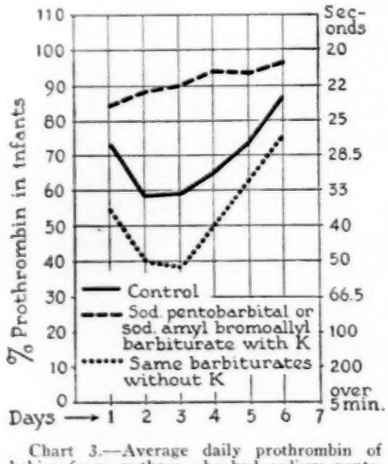

Chart 3.—Average daily prothrombin of babies from mothers who had sodium pentobarbital or sodium amyl bromoallyl barbiturate as first stage analgesic.

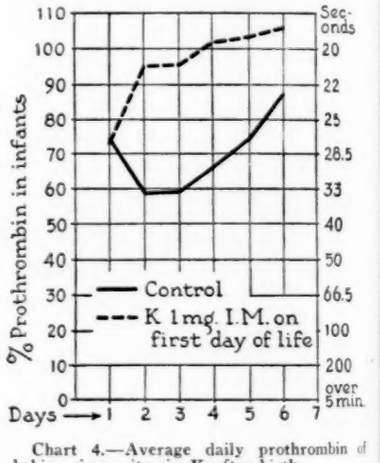

Chart 4.—Average daily prothrombin of babies given vitamin K after birth.

controlled. Another milligram of synthetic vitamin K was administered; forty-five minutes later the prothrombin was 63 per cent of normal, and there was no further bleeding. The following day the prothrombin level was 90 per cent and there were no symptoms. One baby showed vaginal bleeding and jaundice on the third day, with a prothrombin of 35 per cent. One had coffee ground vomitus on the third day, with a prothrombin of 36 per cent. One baby on the fourth day showed a large fluctuant bluish mass on the right cheek, numerous petechial hemorrhages on the palate, a small bluish area on the left cheek and a prothrombin of 10 per cent. A diagnosis of hemorrhagic disease of the newborn was made by the department of pediatrics. One baby showed evidence of intracranial damage on the fifth day, with a prothrombin of 21 per cent. Another showed palatal bleeding on the fifth day (trauma?) and a prothrombin of 10 per cent. One showed coffee ground vomitus on the fifth day, with a prothrombin of 15 per cent. All showed a marked increase in the prothrombin and cessation of bleeding promptly after the administration of vitamin K intramuscularly.

It is interesting to note that in none of the 641 babies whose mothers had vitamin K during labor was there any evidence of neonatal hemorrhage.

SUMMARY

Evidence is presented from a large series of cases to show that:

1. The administration of vitamin K, either the original alfalfa extract or the synthetic product, to a mother in labor increases the percentage of prothrombin of both mother and child. The vitamin may be given orally or parenterally.

2. Such medication also prevents the drop in the porthrombin level of the baby which normally occurs from the second to the fifth day.

3. The administration of sodium pentobarbital or sodium amyl bromoallyl barbiturate as an analgesic definitely decreases the prothrombin level in mother and child.

4. The decrease can be prevented by the administration of vitamin K to the mother during labor.

5. It is apparent that even small doses of barbiturates effect the prothrombin level.

CONCLUSIONS

1. It seems reasonable to assume that hemorrhage is more likely to occur in the presence of a low prothrombin level.

2. There is a normal depression of the prothrombin level of the newborn from the second to the fifth day. This depression is much greater when certain analgesics are administered to the mother during labor.

3. This depression can be prevented by the administration of nontoxic vitamin K to the mother while she is in labor.

4. Such medication should prove effective in lowering the incidence of hemorrhage of the newborn.

5. It seems particularly desirable that vitamin K should be administered when barbiturate analgesics are used.

104 South Michigan Avenue.

THROMBOPHLEBITIS IN THE FOOT

A LITTLE KNOWN LOCALIZATION

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Thrombosis of the veins in the foot were found with great frequency by Neumann [1] in his recent anatomic study. In fully 71 per cent of his patients with positive manifestations in the veins of the lower extremities (100 out of 165 unselected cases coming to surgery) there was also evidence of involvement of the venous channels in the foot, either alone or in combination with a similar process in more proximal regions.

These anatomic figures are striking, especially in the absence of clinical reports on the subject. Although there undoubtedly are many instances of so-called silent thrombi in the foot (as well as elsewhere) which produce neither signs nor symptoms, the paucity of clinical reports cannot be explained on this basis.

In the past eighteen months, however, since our interest has been focused on the condition, the diagnosis of thrombophlebitis in the foot has been made in 10 instances.

REPORT OF CASES

CASE 1.—C. H., a woman aged 63, who had diabetes and advanced peripheral vascular disease of the arteriosclerotic type, had been confined to her wheelchair for many months. She complained of severe pain in the right foot which came on suddenly and persisted for about four weeks before an explanation for it could be found. In the midtarsal region of the right foot there was an infiltrated, tender, cordlike structure along the course of the lateral plantar venous arch. Outlining its course in the skin was a linear bluish discoloration. The surrounding area was puffy and red and the entire right foot was warmer than the left. There was no edema present and no signs of an ascending thrombosis. Large superficial varicosities were present in the right calf.

CASE 2.—M. M., a woman aged 25, because of a severe attack of grip had been confined to bed for five weeks. As soon as she started to walk, pain and swelling of both feet developed. Examination revealed a hot, infiltrated, tender area 3 inches by 3 inches (7.5 by 7.5 cm.) over each instep. At subsequent examinations, when signs of acute inflammation had subsided, a cordlike structure could be felt running parallel to the long axis of the foot.

CASE 3.—M. B., a woman aged 63, had had a corn on the sole of her foot removed by a chiropodist four months before admission. A mild inflammatory reaction persisted for about a week, when she suddenly experienced pain on the inner side of her right ankle. This had persisted since and was increased with walking. The inner aspect of the ankle was warm and swollen. Pitting edema was present in the lower leg. There was great tenderness over the internal malleolus, especially along the course of the posterior tibial vein. Surrounding this region was an area of inflammation about 3 inches in diameter. Tenderness was present in both calves, but there were no other signs of venous involvement. As the signs of acute inflammation subsided a cordlike structure could be clearly outlined behind the internal malleolus.

CASE 4.—F. K., a man aged 59, known to have polycythemia vera, had been seen repeatedly by several physicians who could give no adequate explanation for the pain he complained of in the sole of his right foot, especially since arch supports proved of little benefit to his flat feet. The pain was present on and off for at least four years, becoming more severe on weight

From the Montefiore Hospital.

1. Neumann, R.: Ursprungszentren und Entwicklungsformen der Beinthrombose, Virchows Arch. f. path. Anat. **301**: 708-735, 1930.

bearing or walking. Pitting edema of both legs had been noticed for a long time. The superficial veins of the right foot and leg were distended. Infiltrated, cordlike structures could be palpated, not only in the foot but in the calf and the thigh as high up as the fossa ovalis. The whole foot varied from a dusky red to a purplish hue, depending on the position of the limb.

CASE 5.—E. R., a woman aged 45, who was actively engaged in business, had a severe respiratory infection which kept her in bed for several weeks. Shortly after resuming her usual activities she noticed pain in both her feet. On the left the pain was present in the entire foot as well as in the lower calf. It was especially severe on walking. Behind the medial malleolus a tender cordlike structure about 3 inches in length could easily be palpated; this was outlined on the skin by a purplish discoloration. Extension into the left calf was not demonstrable.

CASE 6.—N. H., a woman aged 60, gave a history of having had pain in both legs for many years, relieved by wearing arch supports for her flat feet. Three weeks prior to our examination great pain in her right foot developed. This radiated up to the calf, making walking difficult. On examination, slight pitting edema of both feet and lower legs was present, more so on the right. The dorsum of the right foot was puffy, and there was an area of redness and superficial tenderness on the tarsus 2 to 3 inches in diameter. The bones in the foot were not tender on pressure. There was tenderness in the region of the midcalf, and a deep cordlike structure could be felt in it. Local examination was otherwise negative. Interestingly enough, the patient gave a history of bilateral phlegmasia alba dolens many years before during pregnancy.

CASE 7.—F. G., a woman aged 65, had a history of long-standing peripheral vascular disease due to arteriosclerosis and diabetes mellitus. One leg had already been removed at the midcalf on the right side. She had been confined to a wheelchair for at least four months when tenderness was noticed along the course of the left saphenous vein in the thigh. This was diagnosed as thrombophlebitis. Pain and some induration persisted for about two months. She then began to complain bitterly of severe pain in the left foot posterior to the metatarsal arch. Tenderness was present and a cordlike infiltration could be felt in the region of the instep extending upward behind the medial malleolus into the calf. Within the next two weeks this tenderness had extended upward along the course of the saphenous vein to the region of the midthigh.

CASE 8.—E. McC., a man aged 36, an employee of the hospital, had injured his foot the day before in tripping. The skin on the medial aspect of the instep was red and warm over an area 2 inches in diameter. A cordlike vein running from this point to the medial side of the foot could be felt. There was great tenderness on pressure. The next day the thrombosis had spread even higher to involve the region of the calf.

CASE 9.—G. P., a man aged 65, had undergone two major operations in the past four months. Shortly after he was permitted up swelling of the right foot developed. Although the swelling was considered at first to be a strain, medical advice was sought after it had persisted for more than three weeks. Examination showed varicosities in both lower legs, although they had been injected several years previously. There was swelling of the entire right foot and ankle. Varicose eczema was present in the lower leg. There was tenderness on pressure over the inner side of the foot along the course of the medial plantar arch. Thrombosed veins could not be felt because of the edema. The entire right foot was warmer than the left.

CASE 10.—M. G., a girl aged 17½ years, had experienced pain in both feet for almost three months. Examination revealed marbleization of both lower extremities and moderate swelling of the feet and ankles. Over the lateral aspect of the left ankle there were patches of brownish, scaly, varicose eczema. Exquisite tenderness was caused by pressure over the deep veins in the left sole, as well as along their course behind the medial malleolus and up to the left calf. In this region, a cordlike structure was easily palpable. The same areas in the right lower extremity were also tender but to a much less degree. The peripheral arterial pulses were patent, although the skin was cold. There was moderate pes planus bilaterally.

COMMENT

It is not our intention in this paper to draw up statistical figures or make generalizations from an admittedly small group of cases. However, thrombosis of the veins in the foot is obviously not a rare occurrence; neither does there appear to be anything peculiar about its etiology. In the cases presented, one can discern some of the usual agents responsible for the condition—grippal infections, trauma and systemic diseases such as polycythemia vera. The inevitable conclusion is that the diagnosis is not made simply because the possibility of a venous thrombosis in this region is not considered. As a result, the symptoms are attributed either to muscle or tendon strain or to other injuries, to inflammations of the bursae or tendon sheaths, to acute static disturbances like flat feet, to gout and even to the pressure of neurofibromas.

Many patients have flat feet, so that their presence provides a ready pitfall in diagnosis. It is likely, however, that weak or flat feet may favor phlebothrombosis by causing an alteration in the architecture of the veins of the foot. In connection with this, Wright [2] has observed 5 instances of phlebitis of the dorsal foot veins of persons who lace their shoes too tightly. He feels that obstruction and trauma to the venous arches in this region is the probable cause.

Most persons had been confined to bed for other illnesses just prior to the appearance of symptoms in the feet. This fact had been reemphasized by Hunter [3] as being too frequent to be considered a coincidence. Inactivity, especially in older persons, disturbs the return flow of blood and favors thrombus formation.

Another point about diagnosis which must be stressed is that inflammatory processes starting in the veins of the foot seem at first to be diffuse processes of cellulitis. This is because the thick skin covering the sole masks individual landmarks. Occasionally, edema may be the only presenting sign. With subsidence in the inflammatory reaction, and with the disappearance of the edema, the thrombosed veins may frequently be felt as cordlike structures in the subcutaneous or deeper tissues.

The diagnosis becomes quite definite if the process spreads upward to the ankle or calf. Occasionally, as in the more superficial veins, a discoloration of the skin, perhaps of linear outline, can be seen over the involved area. In such cases [4] the clinical appearance is certainly characteristic.

It is most important to make a correct diagnosis because the veins of the foot, like other veins in the extremities, or the prostatic or pelvic network of veins, are frequently a source of malignant but clinically unexplainable embolization. In such instances, proper therapeutic measures [5] might prevent or arrest the development of these complications.

SUMMARY AND CONCLUSIONS

Ten cases of thrombophlebitis of the veins of the foot were seen and diagnosed within a period of a year and a half. The condition has hitherto been barely

2. Wright, I. S.: Personal communication to the authors.
3. Hunter, W. C.; Sneeden, V. D.; Robertson, T. D., and Snyder, G. A. C.: Thrombosis of the Deep Veins of the Leg, Arch. Int. Med. **68**: 1-17 (July) 1941.
4. Barker, N.: Thrombophlebitis, in Stroud's Diagnosis and Treatment of Cardiovascular Disease, Philadelphia, F. A. Davis Company, 1940, vol. 2.
5. Homans, John: Varieties of Thrombophlebitis of the Limbs: Their Origin, Course and Treatment, Am. J. Surg. **44**: 3 (April) 1939.

mentioned clinically, although the frequency with which it was found at postmortem examination is well known. The diagnosis is comparatively easy, provided of course the possibility of its existence is kept in mind. On its proper diagnosis rest all the attempts for directing therapeutic efforts.

Gun Hill Road near Jerome Avenue.

Clinical Notes, Suggestions and New Instruments

CARCINOMA OF THE PROSTATE TREATED WITH DIETHYLSTILBESTROL

HISTOLOGIC ALTERATIONS

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The observations recorded here are of interest because of the histologic changes that occurred in the prostate gland during the administration of diethylstilbestrol.

W. E. H., a white man aged 59, entered the Presbyterian Hospital on April 8, 1941 complaining of intermittent hematuria, difficulty in urination, backache, leg pains, loss of appetite, loss of weight and fatigue. These symptoms had become gradually worse during the past two years, and for the past six weeks he had relieved his urinary retention by daily catheterizations.

Three years before, a transurethral resection was done in another hospital for the relief of urinary obstruction. He had had an increasing amount of pain in the lower lumbar region associated with sharp pains down the right thigh for the past seven months, and the intensity of these pains had increased to such an extent that it had become difficult for him to get around. During the past three weeks he had lost 20 pounds (9 Kg.), and the present weight was 149½ pounds (68 Kg.). There were no other details of consequence in the past history.

Fig. 1.—Section of the prostate gland before treatment.

The patient was thin, poorly nourished and anemic. Rectal examination revealed a firm, large, nodular prostate, characteristic of carcinoma.

He had a well defined secondary anemia. The hemoglobin amounted to 8.8 Gm. per hundred cubic centimeters by the Dick-Stevens electric method, and the red blood cell count was 2,900,000 and the white count 8,000. The total nonprotein nitrogen was 34 mg. per hundred cubic centimeters of blood. A Wassermann reaction was negative. His blood pressure was 130 systolic, 82 diastolic. The urine was turbid from pus cells. He had 400 cc. of residual urine when admitted to the hospital.

The retention of urine was treated with an indwelling urethral catheter for a week, and then a transurethral resection was done. Previous to the operation a blood transfusion of 500 cc.

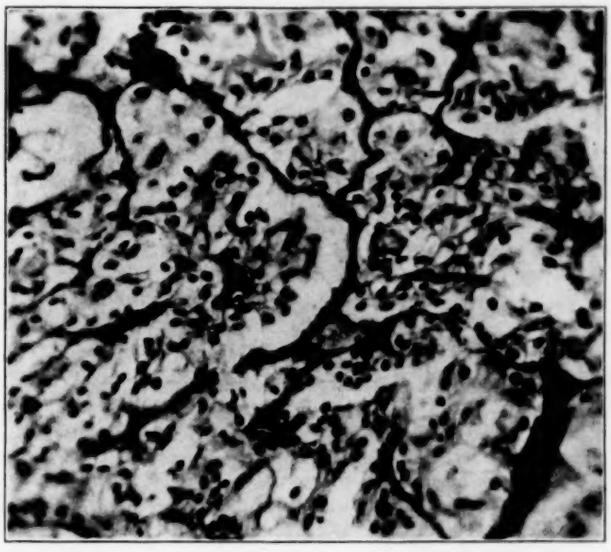

Fig. 2.—Section of the prostate gland after patient had received 1,546 mg. of diethylstilbestrol in two hundred and twenty-three days.

was given. Eight days after the operation he left the hospital. He had no difficulty in voiding, and there was no residual urine.

The microscopic study of the tissue removed from the prostate gland showed adenocarcinoma grade 3, as shown in figure 1. The following histologic report was by Dr. C. W. Apfelbach, pathologist: In pieces of tissue removed from the prostate gland there was widespread epithelial neoplasm, a portion of which grew diffusely through smooth muscle and fibrous tissue without any definite pattern. In other regions the tumor had a definite organoid pattern, consisting of small alveolar structures. In one section there was hyperplasia of the acinar elements.

Three weeks after leaving the hospital the patient was put on daily doses of diethylstilbestrol, beginning with 3 mg. and increasing up to 12 mg. Within ten days he began to show decided clinical improvement. His appetite improved, he gained in weight, his leg and back pains disappeared and his anemia improved. At the end of six months his weight had reached 175 pounds (79 Kg.), and this he has maintained. The induration of the prostate and the periprostatic region appeared to be much softer on rectal examination. While he had no urinary symptoms, his urine continued to show a few pus cells.

At the end of two hundred and twenty-three days, during which time he had received 1,546 mg. of diethylstilbestrol, he was readmitted to the hospital for two days, and pieces of prostatic tissue were removed by transurethral resection for a comparative study. The histologic report by Dr. Apfelbach was as follows: In pieces of tissue removed from the prostate gland there was widespread alteration in the neoplastic cells, characterized chiefly by hydropic degeneration and vacuolation (Fig. 2).

COMMENT

It is difficult to explain how the histologic changes that occurred in the prostate gland could be due to anything except the administration of the diethylstilbestrol. The patient had no other form of therapy. His general clinical improvement and the fact that the prostatic cancer, as determined by numerous rectal examinations, gradually became softer while the patient was under treatment would fit in with the histologic changes that occurred in the prostate gland.

122 South Michigan Avenue.

The diethylstilbestrol was supplied by the Upjohn Company, Kalamazoo, Mich.

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RENAL INFARCTION OF TRAUMATIC ORIGIN

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Renal infarction in itself is not unusual. Its occurrence as the direct result of trauma is rare. Of 376 cases, in the great majority of which renal infarction was secondary to cardiac disease, in only 2 was it due to trauma. In Aschner's review,[1] von Recklinghausen is quoted as reporting the autopsy of an 8 year old boy who died eight days after a severe fall. The left renal artery showed a circular injury in the wall. Distal to this there was extensive thrombosis of all branches, and there was complete necrosis of the kidney. Barney and Mintz,[2] in their study of Massachusetts General Hospital protocols, found a similar instance of a man who died eight days after a fall on his back. The clinical picture was that of ruptured kidney, with shock, hematuria and the finding in the right flank of a mass. At autopsy a large infarct of the right kidney was found, secondary to thrombosis of all vessels of the kidney.

REPORT OF CASE

History.—H. C., a white man aged 48, a CCC employee, brought to the station hospital at 3 p. m. on Dec. 2, 1941, complained of severe left costovertebral angle pain and hematuria.

Three days previous to his entry, he sustained a back injury when the truck in which he was riding turned over. He fell for a distance of about 3 feet, landing on his left side. There was no loss of consciousness, but severe pain occurred in his left flank and costovertebral angle which persisted throughout the next few days. Four hours after the injury he urinated bright red blood. He was admitted to the CCC Hospital and observed. The pain in his flank continued, and a mass appeared. The blood in the urine persisted, and the patient was transferred to this hospital.

Examination.—On admission the patient appeared quite ill and in considerable pain. His temperature was 99.8 F., his pulse rate 104 and his blood pressure 138 systolic and 88 diastolic. There was no evidence of cyanosis or pallor, but the patient was perspiring freely. The cardiovascular system was essentially normal. Posteriorly at the bases of the lungs, most pronounced on the left, were many coarse sticky rales. There were no changes in percussion resonance. In the left flank, extending posteriorly from the twelfth rib to the crest of the ilium, was a large firm fixed mass, excruciatingly tender. The skin over this area was considerably abraded. There was no suprapubic swelling or tenderness. Some dried blood was noted on the external genitalia. The prostate gland was normal.

On admission, the red blood cell count was 4.1 million, with 85 per cent hemoglobin. Repeated urinalyses revealed several pus cells and innumerable red blood cells. An abdominal flat roentgenogram revealed normal renal and psoas shadows on the right, but both renal and psoas shadows were obscured on the left. Considerable gas distended the bowel.

Course.—The patient was observed carefully for two days. The blood count did not vary from the admission level. He continued to have gross hematuria. The mass appeared to be somewhat larger and more indurated. The blood pressure began to drop slowly until on December 4 it was 112 systolic and 68 diastolic. The temperature rose to 101.2 F. On December 4 an intravenous urogram was done, which revealed excellent contours and function of the right kidney. The left kidney was not visualized and no dye was secreted in thirty minutes. A diagnosis of ruptured kidney with interference of the renal blood supply was made, and the patient was operated on.

Immediately after spinal anesthesia the patient's pulse became imperceptible and the blood pressure could not be recorded. Intravenous fluids and restorative measures brought the blood pressure up to 108 systolic and 60 diastolic and the operation was continued. The usual modified Israel kidney incision was made. The perinephric space was found considerably indurated with fluid and blood. The tissues were very friable. Large clots were found about the hilus. The kidney was freed with difficulty and removed. The pedicle was found to be intact. There was a considerable area of hemorrhage about the hilus and peripelvic fat. In one area over the cortex a small tear was noted, but the organ itself presented no laceration of consequence. The kidney had the diffuse dusky mottled appearance of infarction. The incision was closed in layers, sulfanilamide powder being used in the wound. The patient received an indirect transfusion of 500 cc. of whole blood on returning to the ward. The postoperative course was exceptionally good. The temperature returned to normal on the eighth day. The blood pressure remained at a fairly constant level averaging 140 systolic and 80 diastolic. On the eighteenth postoperative day the patient was up, and he was discharged on the twenty-eighth day.

Gross Pathology Examination.—The specimen consisted of a slightly enlarged kidney, which had been previously sectioned, and attached pedicle. The capsule and fragments of attached fatty connective tissue were somewhat hemorrhagically discolored. The most hemorrhagic staining, however, existed in the supporting tissues of the renal pedicle. The capsule stripped readily, revealing a slight rent in the anterior surface, 1 cm. in diameter. The subcapsular surfaces were smooth and marked by several circumscribed pale gray areas, the largest 3 cm. in diameter. These on section were broadest in the cortex and tapered down toward the pelvis. The intervening surfaces everywhere were reddish pink to deep brick red.

Microscopic Pathologic Examination.—In ten sections cut from different portions of the kidney normal tissue was not found at all. Various degrees of necrosis were seen from the earliest tendency toward poor staining and cytoplasmic swelling to complete loss of cellular and nuclear structure. The latter change predominated. Hemorrhage was evident, though patchy, masses of cells being found in interstitial spaces, tubules and glomeruli. A small amount of polymorphonuclear infiltration was also evident. The blood vessels were interesting, there being few, from small to large, that did not contain well formed thrombi. Section through the stump of the renal artery revealed early necrosis, with failure of the nuclei to take the stain well, fragmentation of the intima and underlying elastic lamellas. A fragment of thrombus was present in the lumen.

COMMENT

The literature is uniform in its agreement on the difficulty in differential diagnosis between renal infarction and acute surgical conditions of the kidney, whether due to stone or other causes. Various authors point out that local or systemic findings, urinalysis, cystoscopy and urography are usually unreliable in establishing the diagnosis and that only the detection of a primary cardiac lesion will direct attention toward renal infarction when due to embolism in such instances. However, when the cause of the infarction is local, as in our case, and the factor of trauma points to rupture of the kidney, differential diagnosis seems impossible even in retrospect. The classic signs and symptoms of the latter, i. e. history of trauma, mass over the flank, local tenderness, fever, gross hematuria and absence of renal function as shown by the intravenous urogram, were all present in this case. Granted that, through this experience, suspicion of the presence of infarction may be aroused in similar cases in the future, differentiation of the two conditions is still not possible short of surgical intervention. Wood[3] has indicated that an intravenous urogram should be made in all traumatic cases as soon as possible after injury and that a temporary anuria may occur in the first twenty-four hours. In the case reported the anuria was present on the fourth day following injury. Retrograde study was deemed inadvisable because of the danger of secondary hemorrhage, infection and embolism.

This case is presented because of the rarity of renal infarction of traumatic origin and because of the signs and symptoms which suggested ruptured kidney.

1. Aschner, P. W.: Am. J. M. Sc. **164**: 386 (Sept.) 1922.
2. Barney, J. D., and Mintz, E. R: Infarcts of the Kidney, J. A. M. A. **100**: 1 (Jan. 7) 1933.
3. Wood, A. H.: J. Urol. **37**: 437 (April) 1937.

Special Article

PRIMER ON ARTHRITIS

PREPARED BY A COMMITTEE OF THE AMERICAN RHEUMATISM ASSOCIATION: EDWIN P. JORDAN, M.D., CHICAGO, CHAIRMAN; WALTER BAUER, M.D., BOSTON; RALPH H. BOOTS, M.D., NEW YORK; RUSSELL L. CECIL, M.D., NEW YORK; H. C. COGGESHALL, M.D., DALLAS, TEXAS; M. HENRY DAWSON, M.D., NEW YORK; PHILIP S. HENCH, M.D., ROCHESTER, MINN.; J. ALBERT KEY, M.D., ST. LOUIS; L. MAXWELL LOCKIE, M.D., BUFFALO; GEORGE R. MINOT, M.D., BOSTON; RALPH PEMBERTON, M.D., PHILADELPHIA, AND LORING T. SWAIM, M.D., BOSTON.

INTRODUCTION

The American Committee for the Control of Rheumatism, cooperating with the Committee on Scientific Exhibit of the American Medical Association, published the first Primer on Rheumatism in 1934. Now additions to the scientific knowledge of the rheumatic diseases necessitate a thoroughgoing revision if it is to continue to serve as an accurate introduction to the subject.

One of the principal difficulties encountered by the clinician in the management of chronic arthritis has been the lack of understanding of the important points of differential diagnosis and insufficient knowledge of the pathologic and physiologic factors involved. In this discussion rheumatic fever and tuberculous arthritis have been omitted. After publication in THE JOURNAL, the Second Primer on Arthritis will be available in pamphlet form at a cost of fifteen cents.

HISTORY

Among the first of the disease entities of which there are any records is the syndrome of arthritis. Evidences of its ravages are to be seen in the small Triassic dinosaurs of 200,000,000 years ago. Throughout the ages arthritis is evident in fossil remains of succeeding geologic eras down to and including the age of mammals and the advent of man. It affected the ancient Egyptians and was one of the reasons for the extensive baths which the Romans built throughout their empire. Thus there has been ample opportunity to recognize the importance of the disease and to initiate steps to prevent or cure it.

INCIDENCE AND SOCIAL PROBLEMS

A recent survey, under the auspices of the United States Public Health Service, of the calculated incidence of certain diseases revealed that "rheumatism" affects, in any one year, a greater number of persons than are affected by heart disease or arteriosclerosis.

Tables 1 and 2 are instructive.

The number of persons disabled by rheumatic disorders during each year exceeds those affected by diabetes in a ratio of nearly ten to one, tuberculosis ten to one, cancer and tumors seven to one. From the standpoint of days lost from work, arthritis surpasses injury from accidents. The data for other countries is comparable to those for the United States. Among the working population of Berlin the number of days of disability from arthritis in 1927 was 3.4 times greater than that from tuberculosis. In England rheumatism causes one sixth of the total industrial disability, and one sixteenth of all moneys paid out by England for pensionable invalidity is devoted to rheumatic diseases. These figures take no account of persons other than the insured population. Among chronic disorders in the United States, rheumatism is second only to mental and nervous diseases as a cause of days lost from work. The estimated cost of medical care alone for these cases exceeds $100,000,000 annually. To this large sum there should be added an inestimable amount due to losses in production and education occasioned by disability among workers and students. While these disorders affect persons in all economic groups, it may be noted that over 50 per cent of the total number of days lost from work was accounted for by families with incomes of less than $1,000 annually. During the first world war there was an estimated incidence of chronic arthritis alone in the United States Army of 60,000 cases a year for an army the size of ours at the end of hostilities. Among ex-service men 35,000 are disabled by arthritis at the present time and receive compensation to the extent of $10,000,000 annually.

TABLE 1.—*Estimated Prevalence of Specified Chronic Diseases in the United States (1937)*

Disease	Number of Cases
Rheumatism	6,850,000
Heart disease	3,700,000
Arteriosclerosis and high blood pressure	3,700,000
Hay fever and asthma	3,450,000
Hernia	2,100,000
Hemorrhoids	2,000,000
Varicose veins	1,750,000
Chronic bronchitis	1,700,000
Nephritis and other kidney diseases	1,550,000
Nervous and mental diseases	1,450,000
Goiter and other thyroid diseases	1,200,000
Sinusitis	1,150,000
Cancer and other tumors	930,000
Diseases of female organs	720,000
Tuberculosis, all forms	680,000
Diabetes mellitus	660,000
Diseases of gallbladder and liver	640,000
Other diseases of the circulatory system	440,000
Chronic tonsillitis and other throat disorders	380,000
Ulcers of stomach and duodenum	330,000
Diseases of bladder and urethra	270,000
Chronic diseases of the skin	270,000
Anemia	240,000
Chronic appendicitis	170,000
Chronic diseases of the eye	150,000
Chronic diseases of the ear	100,000
Chronic pleurisy	90,000
Diseases of the prostate and male genitourinary organs	80,000

From Preliminary Reports, the National Health Survey, Sickness and Medical Care Series Bulletin No. 6, U. S. Public Health Service, Washington, D. C., 1938.

Perhaps the first organized attempt at study of the syndrome began in England with the Cambridge Committee for the Study of Special Diseases. Unfortunately this effort was curtailed by the outbreak of the first world war. The next step in development was the establishment in 1920 of the Ligue Internationale contre le Rhumatisme. This organization, then composed chiefly of European representatives, encouraged the formation in a number of countries of groups interested in the problem and qualified to study it. This movement extended to the United States, where there was formed in 1928 the American Committee for the Control of Rheumatism. This committee entered on active efforts to arouse the interest of the profession in the magnitude of the sociologic problem presented and to extend knowledge concerning it by means of publications and, especially, of extensive exhibits in connection with the Scientific Exhibit of the American Medical Association. In 1930 the desirability became apparent of organizing a national society for the study and control of rheumatic disorders and

the American Rheumatism Association was, therefore, founded. It consisted of a larger group of physicians interested in and qualified to study the syndrome of arthritis and allied topics. This society holds yearly meetings for the presentation of scientific papers and discussions, sponsors an extensive review of English and American literature, and in various other ways promotes wider interest and more extensive interchange of information concerning the problem. There are now also available to the profession, several journals devoted exclusively to the problem presented by rheumatic disease.

Under the auspices of the Ligue Internationale contre le Rhumatisme six international congresses have been held, the last of which was in England in 1938.

Among the various lines of progress in the field of rheumatic disease, one of the most encouraging is the greater attention now paid to the problem in the medical schools of the United States. There is a growing number of special clinics, research units and hospitals devoted to the care and study of patients with rheumatic diseases. Better evaluation of methods of treatment and a fuller understanding of the basic nature of the disease are being realized in these centers, but much still remains to be accomplished. Great significance attaches to arousing in the public mind appreciation of the disease as a social problem, the value of adequate treatment in the early stages and the importance of providing adequate institutional care for sufferers from it, not only in the late stages but throughout the disease.

TABLE 2.—*Estimated Annual Number of Days Lost from Work or Other Usual Pursuits by Reason of Specific Chronic Diseases (United States, 1937)*

Disease	Annual Number of Days Lost
Nervous and mental diseases	132,500,000
Rheumatism	97,200,000
Heart disease	95,200,000
Arteriosclerosis and high blood pressure	56,900,000
Tuberculosis, all forms	41,400,000
Cancer and other tumors	36,300,000
Nephritis and other kidney diseases	28,400,000
Diseases of the female organs	26,800,000
Hay fever and asthma	21,900,000
Diseases of gallbladder and liver	20,000,000
Diabetes mellitus	19,200,000
Ulcers of the stomach and duodenum	13,600,000
Hernia	13,600,000
Chronic diseases of the skin	10,300,000
Anemia	8,500,000
Diseases of the bladder and urethra	8,200,000
Chronic bronchitis	8,000,000
Chronic appendicitis	7,600,000
Goiter and other thyroid diseases	7,600,000
Other diseases of the circulatory system	6,600,000
Sinusitis	6,000,000
Varicose veins	5,900,000
Chronic tonsillitis and other throat infections	5,400,000
Hemorrhoids	5,100,000
Chronic pleurisy	4,200,000
Chronic diseases of the eye	4,200,000
Chronic diseases of the ear	3,300,000
Diseases of the prostate and male genitourinary organs	3,300,000

From Preliminary Reports, the National Health Survey, Sickness and Medical Care Series Bulletin No. 6, U. S. Public Health Service, Washington, D. C., 1938.

CLASSIFICATION OF ARTHRITIS

Arthritis occurs in a number of different forms, depending on various etiologic agents. Some of the groups are characterized by certain pathologic and clinical features which make their differentiation comparatively easy. In other instances only the most careful study will determine the identity of the articular disorder.

Arthritis may occur in either an acute or a chronic form. However, almost any type of acute arthritis may pass into a subacute or chronic form, and many cases of chronic arthritis are subject to acute exacerbations.

The classification of arthritis would be much simplified if one knew the etiology of all the various types. Unfortunately this is not the case. Indeed, in the majority of cases the etiology of the particular disease cannot be definitely determined.

Roughly speaking, the great majority of the cases of arthritis fall into one or another of five groups: (1) the frankly infectious cases caused by a specific micro-organism; (2) cases that are probably infectious but of unproved etiology; (3) the degenerative forms of joint disease, which in Europe are often spoken of as arthroses; (4) arthritis resulting from physical injury to the joint by trauma; (5) gouty arthritis. These are the five common divisions of arthritis, and under these main groups there are certain subdivisions. In addition to these five prevalent varieties, however, there are certain rare forms of arthritis, such as the tabetic joint and intermittent hydrarthrosis, which should be included.

1. *Infectious Arthritis of Proved Etiology.*—This general heading includes all cases of arthritis due to infection in which the specific microbic cause can be proved. The individual arthritides are named according to the particular micro-organisms and joints concerned; e. g., pneumococcic arthritis of the left shoulder, tuberculous arthritis of the right knee, gonococcic arthritis of knees and the like.

The micro-organisms most commonly responsible are the pyogenic cocci, the tubercle bacillus and Treponema pallidum, but many others may occasionally act as the cause of articular infection. Of the pyogenic cocci the hemolytic streptococcus, pneumococcus and staphylococcus usually cause a frankly suppurative arthritis which occurs during the course of septicemia or some other severe systemic infection caused by the same agent.

2. *Probably Infectious Arthritis, Etiology Unknown.*—Two of the main divisions of arthritis come under this heading: the arthritis of rheumatic fever and rheumatoid arthritis. Under rheumatoid arthritis one may include such clinical variants as Still's disease and the ankylosing arthritis of Marie-Strümpell.

Rheumatic fever is still classified as a disease of unknown origin. However, authorities are pretty well agreed that the disease is due to infection, and many students are convinced that it is closely associated with hemolytic streptococcus infection.

Rheumatoid arthritis is probably a chronic infectious disease, but the specific agent has not yet been determined. Under this heading are included a majority of the cases of chronic progressive polyarthritis for which a specific cause cannot be discovered. The disease is characterized in its early stages by transitory pain, stiffness and swelling of the joints and in its later stages by deformities and ankylosis.

3. *Degenerative Joint Disease or Osteoarthritis.*—Osteoarthritis represents a degenerative process which involves both the cartilage and the adjacent bone and is entirely different from the arthritis which results from actual infection of the joint. Some authors speak of degenerative arthritis as an arthrosis, and the impres-

sion is quite general that the changes which occur in the cartilage and bone often result from prolonged or oft repeated trauma. Osteoarthritis may appear in a generalized or localized form. The disease is much commoner in middle-aged or elderly persons, though occasionally it is encountered (particularly in women) in the thirties.

4. *Arthritis Resulting from Physical Injury to the Joint by Trauma.*—Injury may occur to the synovial membrane, the cartilage or any one of the ligaments. The ordinary sprained ankle is a good example of the trauma which can lead to this form of arthritis. If the results of trauma are not properly handled, the traumatic arthritis may become chronic, but usually the condition heals rapidly.

TABLE 3.—*Classification of Arthritis*

Arthritis due to infection. *Specify joint and organism when known, as:*
- Of spine due to tuberculosis
- Of knee due to gonococcic infection
- Of wrist due to pneumococcic infection
- Of hip due to syphilis

Arthritis due to rheumatic fever. *Record* Rheumatic fever *as primary diagnosis invariably*

Arthritis, rheumatoid, of.... *Specify as:*
- Arthritis, rheumatoid, multiple[1] (proliferative arthritis, atrophic arthritis, chronic infectious arthritis, Still's disease)
- Arthritis, rheumatoid, of spine (Marie-Strümpell arthritis)

Arthritis due to direct trauma of.... *Specify joint and trauma, as:*
- Of knee due to contusion
- Of elbow due to habitual dislocation

Neurogenic arthropathy. (Charcot joint) *Specify joint, as:*
- Tabetic arthropathy of knee

Arthritis due to gout. *Specify joint. Record* Gout *as primary diagnosis invariably*

New growths of joints. *Specify joint and neoplasm as:*
- Synovioma of knee

Degenerative joint disease, multiple, due to unknown cause; osteoarthritis (hypertrophic arthritis, degenerative arthritis, chronic senescent arthritis)

Hydrarthrosis, intermittent, of.... *Specify joint*

Periarticular fibrositis. *Specify joint*

Disease in which arthritis, arthropathy or arthralgia is frequently associated (diagnose disease, list joint manifestation as symptom)
- Acromegaly
- Acute disseminated lupus erythematosus
- Cyst of meniscus of knee
- Dermatomyositis
- Drug intoxication. *Specify drug when known*
- Erythema multiforme exudativum
- Erythema nodosum
- Hemophilia
- Hysteria
- Ochronosis
- Osteochondritis dissecans
- Osteochondromatosis
- Periarteritis nodosa
- Psoriasis
- Raynaud's disease
- Reiter's disease
- Scleroderma
- Serum sickness
- Purpura, various types

5. *The Arthritis of Gout.*—Gout is a disease of unknown origin, though it is commonly defined as a disturbance of purine metabolism. It is characterized by acute recurrent attacks of arthritis, each of which is followed by a complete remission. Later on, however, the arthritis may become chronic. In late gout deposits of sodium urate crystals, the so-called tophi, are frequently found in articular, periarticular and subcutaneous tissues. At least 95 per cent of gouty patients are men, and in many there is a history of gout in some other member of the family.

Many classifications of arthritis are already in use, both in this country and abroad. The classification given in table 3 has been approved by the Nomenclature Committee of the American Rheumatism Association and for inclusion in the Standard Nomenclature of Disease.

OTHER DISTURBANCES OF JOINTS

I. Disturbances of the joints secondary to abnormal postural strain.

II. Disturbances of the joints secondary to lesions of bone.

III. Primary neoplasms of the joints (e. g. cyst; xanthoma; hemangioma; giant-cell tumors; synovioma).

IV. Disturbances of the joints associated with loose bodies.

V. Disturbances of the joints secondary to functional or psychogenic causes.

RHEUMATOID ARTHRITIS

ETIOLOGY

The cause of rheumatoid arthritis remains unknown. Although many theories (infectious, metabolic, endocrine, circulatory and neurogenic) have been proposed, not one of them has been generally accepted.

Many of the clinical features of rheumatoid arthritis (fever, tachycardia, leukocytosis, increased sedimentation rate, inflammation of the articular tissues, exudative characteristics of the synovial fluid and enlarged regional lymph nodes) suggest that it is an infectious disease. However, similar clinical features may be observed in gouty arthritis, which is presumably a metabolic disease.

Adherents to the infectious theory have considered protozoa, viruses and bacteria as possible causative agents. The protozoan theory, advanced some years ago, has had few proponents and is rarely mentioned in current literature. The evidence favoring the virus theory has been of an indirect nature, not confirmed by many workers. No one has claimed to have isolated the causative virus.

Various theories have been proposed to explain the manner of production of rheumatoid arthritis by bacteria. Some have considered the disease the direct result of bacterial invasion. Others contend that specific bacterial toxins emanating from an infected focus spread to the joints. Still others postulate that bacterial allergens, products of one or more bacterial species, react with hypersensitive tissues and thereby produce the disease. Many micro-organisms have been incriminated. Recently some investigators have held Streptococcus hemolyticus alone as responsible, on the basis of indirect bacteriologic evidence. It has been demonstrated that many patients with rheumatoid arthritis possess serum agglutinins to Streptococcus hemolyticus in high titer. The same patients may possess serum precipitins to the carbohydrate and protein fractions of the same organism. Further investigation is necessary to determine whether or not Streptococcus hemolyticus infection occurs in patients with rheumatoid arthritis, and if so whether it plays any role in the production of the disease. Final conclusions concerning the bacterial theory must be deferred until adequate proof is at hand.

Those who favor the metabolic theory contend that bacteria play either no role or only a minor one. Some type of disturbed alimentation has frequently been considered a cause of the disease. However, regularly occurring physiologic or pathologic alteration of the gastrointestinal tract has not been demonstrated. Although the various metabolic theories are supported by evidence as unconvincing as that for the infectious theories, they will be presented in brief.

A disturbance of protein metabolism has at times been considered of etiologic significance. Lacking factual data, this theory is entirely hypothetic. Current workers believe it had its origin at the time the true nature of gout was recognized.

Alterations in carbohydrate metabolism have been considered by some to be involved in the disease. Although to date the exact relations of these alterations to the disease are unknown, the majority opinion is that they are not causally related to the arthritic process.

A lowered cystine content of the finger nails of some patients with rheumatoid arthritis has been thought by some to indicate the existence of a sulfur deficiency. The abnormality, however, is probably the result of a lowered serum globulin content and not indicative of a disturbed sulfur metabolism. The blood glutathione content and the sulfur metabolism of patients with rheumatoid arthritis have been shown to be normal. Parenteral administration of colloidal sulfur causes increased excretion of sulfur and exerts no beneficial effect on the disease.

The increased calcium and phosphorus excretion observed in some patients with rheumatoid arthritis is no greater than is seen in consequence of disuse. Fasting serum calcium, phosphorus and phosphatase values are always normal. The plasma cholesterol may be lowered. The increased plasma globulin sometimes observed remains unexplained. Rheumatoid arthritis due to food allergy must be rare, because most students of the disease have never observed it.

In a vitamin conscious age, it is not surprising that deficiency of almost every vitamin has been considered the cause of the disease. The demonstrated vitamin C deficiency is not understood. It is not specific for rheumatoid arthritis. The administration of large amounts of ascorbic acid does not alter the course of the disease, although the deficiency may be corrected. The same can be said of vitamin A. Vitamin B deficiency is not specific for rheumatoid arthritis. Despite the claims and exploitations of certain pharmaceutic firms concerning vitamin D, the Council on Pharmacy and Chemistry of the American Medical Association has never accepted such preparations for the treatment of arthritis.

No type of endocrine disturbance has been shown to be causally related to rheumatoid arthritis.

The abnormal peripheral circulation does not alone explain the cause.

The clinical abnormalities which favor the neurogenic theory are probably the result of the disease or caused by the same agent responsible for the articular changes.

Various factors, such as climate, fatigue, emotional strain, trauma or acute infections, may precipitate initial or recurrent attacks of rheumatoid arthritis but they cannot as yet be accepted as the causative agents.

The cause of rheumatoid arthritis being unknown, future workers should continue to search for hitherto undetected metabolic factors as well as organisms.

PATHOLOGY

Although rheumatoid arthritis is invariably described as a systemic disease of unknown cause, most writers rarely mention pathologic changes in systems other than the skeletal. This serious omission should be corrected.

Scudamore, as early as 1827, pointed out that rheumatoid arthritis was essentially a disease of dense white fibrous tissue. More recently it has been emphasized that the disease affects primarily the ground substance of the mesenchyme. This ground substance is a colloidal, jelly-like material existing in the interstices between cells and fibers of mesenchymal origin. With this concept in mind it is not difficult to understand why the lesions of rheumatoid arthritis are so widespread.

The articular lesions vary greatly with the stage and severity of the disease. Gross examination early in the disease may reveal severe periarticular swelling and edema, little or no synovitis, and a normal or slightly increased amount of synovial fluid. Occasionally the disease may remain confined largely to the periarticular tissues. In such instances considerable impairment of joint function may result from the ensuing fibrosis of the periarticular structures with little or no demonstrable intra-articular change. In most cases intra-articular alterations are present. Early in the disease, excessive proliferation of the synovial cells causes thickening of the synovial lining. It appears edematous and is grayish or pinkish red. The number and size of the synovial villi are greatly increased. At this stage of the disease, the synovial fluid content is increased and the cartilage has usually lost its normal luster and may show superficial ulcerations. As the disease progresses, the changes in the articular cartilage become more obvious. It appears grayish white, is softer and may contain larger ulcerations. If the proliferation of the synovial lining tissue continues, it will eventually extend on to the articular cartilage and may envelop it completely. When the opposing articular cartilages are both enveloped with such inflammatory granulation tissue (pannus), fibrous tissue ankylosis is apt to occur. The advancing pannus not only smothers the underlying cartilage, it actually invades it. Such invasion may be so extensive as to destroy completely the articular cartilage, and bony ankylosis may follow. The proliferating connective tissue seen in the subchondral marrow spaces is the result of invading pannus penetrating from the articular surface. Gross examination of a severely afflicted joint often reveals adherence of all articular structures in consequence of the pannus formation and the resulting fibrous tissue ankylosis and adhesions. In such cases no articular cartilage may be visible; if seen, its surface is greatly altered. Late in the disease the bony cortex of the adjoining bones is reduced in thickness, the trabeculae are fewer in number and the bone marrow is more vascular.

In the active phase of the disease, microscopic examination discloses inflamed synovial lining tissue. There are pronounced proliferation of the synovial cells, increased vascularity and varying grades of cellular infiltration which may or may not be perivascular. The majority of the cells are lymphocytes. Focal collections of lymphocytes, whether perivascular or not, are one of the characteristics of the disease. They are not always seen, however. Similar cellular infiltrations may be observed in the bone marrow. The microscopic changes, especially in the first stages of the disease, are so ill defined that an absolute diagnosis is often impossible.

The subcutaneous nodules of rheumatoid arthritis constitute the one most characteristic pathologic lesion of the disease. Although they are similar to the nodules of rheumatic fever, differentiation is usually possible because of predominance of one or more of the pathologic alterations. Exudation of plasma and blood cellular constituents is a prominent feature of rheumatic fever nodules. In addition, small focal areas resembling Aschoff nodules are frequently seen. In the nodule of

rheumatoid arthritis proliferation and degeneration predominate, Aschoff-like nodules are rarely if ever seen and exudation is not a prominent feature. The vascular changes seen in such nodules vary from perivascular infiltration of inflammatory cells to diffuse inflammation and degeneration of the entire wall. Thrombosis is observed more commonly in the nodule of rheumatoid arthritis. Similar vascular lesions may occur in the myocardial and renal vessels.

Other visceral changes have been noted. The pleura and the pericardium may be involved. Adherent pericarditis is occasionally encountered. Future studies must determine whether or not there is a specific cardiac lesion in rheumatoid arthritis. Muscle, nerve and fibrous tissue involvement occur frequently.

ONSET AND SYMPTOMATOLOGY

Prodromes.—Many authors refer to prodromal symptoms but, as the onset of the disease is frequently insidious, it is impossible to determine whether these symptoms do not actually constitute a part of the disease itself. In many instances the initial complaints are those of fatigue, exhaustion, lassitude, vasomotor disturbances, numbness and tingling in the extremities, loss of weight and general debility. Since similar symptoms become more pronounced in later stages of the disease, it is probable that the onset has already occurred by the time these symptoms have appeared. In a certain proportion of cases the disease appears to follow an infection, especially an infection of the upper respiratory tract. In other cases such events as emotional stress and strain, severe nervous shocks and various psychic traumas appear to exert a precipitating influence.

The onset of the disease itself may be acute, subacute or insidious. The majority of cases begin insidiously. One or more joints gradually become swollen and painful, and the disease slowly and progressively spreads to involve other articulations. In these cases there may be comparatively little systemic reaction during the early stages. In other instances the onset is more subacute in character. There may be repeated mild attacks of polyarthritis, accompanied by pain, swelling and redness of the affected joints, together with constitutional disturbances such as slight fever, tachycardia and a mild leukocytosis. Finally, in a certain proportion of cases the disease begins as an acute polyarthritis with high fever and leukocytosis. Some of these cases follow an acute infection of the upper respiratory tract and, in their initial stages, simulate rheumatic fever.

Symptomatology. — In typical cases the articular involvement shows a tendency toward a symmetrical distribution and displays an inclination to proceed from the peripheral joints toward the trunk. The smaller joints of the fingers are particularly prone to be affected, especially the proximal interphalangeal joints of the hands. The involvement of these joints produces the fusiform enlargement of the fingers which is so characteristic a feature of the disease in its early stages. For some reason the terminal interphalangeal joints usually escape. In this respect it usually differs from osteoarthritis. Next in order of frequency come the metacarpal phalangeal joints, followed by the wrists, knees, elbows, ankles, shoulders and hips. In severe cases practically every joint in the body may become involved.

Clinical Features of the Articular Lesions.—A typical rheumatoid joint presents a characteristic appearance. As a rule, swelling, pain and limitation of movement are present but the nature of the swelling is quite distinctive. Owing to the thickening of the periarticular tissues and the atrophy of the muscles above and below, the joint presents a spindle-shaped appearance. On palpation it is evident that the swelling is largely due to thickening and edema of the periarticular structures. The adjacent bursae and tendon sheaths are frequently involved, but there is rarely as much increase in synovial fluid within the joint as might be expected.

While rheumatoid arthritis may become arrested or quiescent at any stage, it usually proceeds to a more chronic condition. The periarticular swelling gradually subsides and contractures begin to develop. The resulting deformities constitute one of the most distressing, disabling and painful afflictions known in any disease. The changes are likely to be particularly apparent in the hands, wrists, knees and elbows, but almost every joint in the body may be involved. In the hands the most common types of deformity are (1) simple flexion of the proximal interphalangeal joints, (2) atrophy of the interossei with thickening of the metacarpal and phalangeal joints and flexion of the terminal joints, (3) simple ulnar deviation at the metacarpal phalangeal joints. In advanced cases fibrous and bony ankylosis may occur, accompanied by subluxation or dislocation of the affected joints. The knee frequently becomes fixed in a position of partial flexion, which is one of the most distressing deformities encountered in arthritis.

Muscular Weakness and Atrophy.—Muscular weakness and atrophy are prominent in rheumatoid arthritis and in some cases constitute the most striking features of the entire symptomatology of the disease. Atrophy usually is particularly noticeable in the muscles of the hands, but it also occurs in all the muscles of the extremities and contributes to the fusiform appearance of the joints. In the opinion of the majority of observers the muscular atrophy is an integral part of the disease and is not attributable to disuse alone.

Cutaneous Changes.—The skin of the extremities frequently becomes smooth, glossy and atrophic, and there may be redness of the thenar and hypothenar eminences. The hands are usually cold and clammy but occasionally they are warm and moist—the so-called hot-house palms. In either case the contrast to the drier and coarser skin present in osteoarthritis is usually definite. Changes in pigmentation are occasionally seen including a peculiar bronzing, which is particularly distinct over the face and on the extremities. In addition, vitiliginous patches are sometimes observed. Psoriasis occurs in about 3 per cent of cases. This association has long been recognized and has occasioned much speculation.

Subcutaneous Nodules.—Characteristic subcutaneous nodules occur in 15 to 20 per cent of cases. The nodules are usually found in the region of the elbows and less frequently over other bony prominences. They vary in size from scarcely palpable seedlike particles to lesions the size of an olive. They are not painful except when their position exposes them to undue pressure. Subcutaneous nodules are more frequently observed in severe cases and may persist for years.

Constitutional Symptoms.—Fever: There is no uniformity to the degree of pyrexia which may occur in rheumatoid arthritis. In many cases the temperature is slightly elevated in the early and more active stages but it may reach no higher than 99 or 99.5 F. In other cases there may be a temperature of 100 to 101 F.

for several weeks or even months with frequent remissions and exacerbations. In still other and more fulminating cases a spiking temperature of 103 to 104 F. may be maintained for week after week. Examples of this sort are more frequently seen in the rheumatoid arthritis of children (Still's disease).

Pulse: A moderate tachycardia is the rule even in cases unattended by fever. Persistent tachycardia is often a striking feature.

Peripheral Circulation: There is diminished peripheral circulation in this disease. The cold clammy hands, the thin atrophic skin and the cutaneous pigmentation are possibly expressions of this altered physiologic state.

Blood Picture: The blood picture presents wide variations. A definite degree of anemia is the rule, the average hemoglobin reading being in the neighborhood of 70 per cent with a corresponding diminution in the red cells. In severe but relatively rare cases a more extreme grade of anemia may develop with hemoglobin determinations of 40 to 60 per cent and red cell counts of 2.5 to 3 million.

The white cell count varies considerably in different cases. In the majority of instances it is within normal limits or only slightly elevated. In the acute and active stages, however, counts of 12,000 to 20,000 may be observed, while in long-standing chronic cases a definite leukopenia often develops.

The differential count shows corresponding variations. An increase in the polymorphonuclear leukocytes is the rule in the active stage of more acute cases, and this persists as a shift to the left in the more chronic cases. The platelets are normal.

General Nutrition: The general nutrition suffers severely in rheumatoid arthritis. Partly because of the disease itself and partly because of secondary consequences, the general state of the bodily functions is greatly impaired. Although muscular atrophy is the most pronounced feature, all the connective tissue structures are affected in greater or less degree. In severe cases profound cachexia may develop.

Gastrointestinal Disturbances: Various expressions of abnormal gastrointestinal physiology are often seen. They may be secondary to the chronic debilitating nature of the disease. Achlorhydria occurs in about 20 per cent of cases, but this incidence is not significantly greater than in many other diseases in the same age period. Visceroptosis, stasis and atony of the colon are observed in a certain proportion of cases but only rarely do they produce symptoms.

Visceral Manifestations: Enlargement of Spleen and Lymph Nodes: Splenic enlargement occurs in between 5 and 10 per cent of cases. Usually only the tip of the spleen can be felt, but occasionally the margin may extend half way to the umbilicus. Such a degree of splenomegaly may be associated with a severe secondary anemia, leukopenia and cutaneous pigmentation. These cases are sometimes referred to as "adult Still's disease" or "Felty's syndrome." Enlargement of the lymph nodes is commonly observed. Usually the enlargement is of only moderate degree, but occasionally large firm nodes are present in the axillary and inguinal regions.

Carditis: Carditis is observed in a proportion of cases of rheumatoid arthritis, but in these instances the presence of a previous or concurrent rheumatic fever must be considered. Pericarditis with effusion is occasionally seen in rheumatoid arthritis in children and adhesive pericarditis in adults.

Iritis: Iritis, often of an intractable nature, occasionally accompanies rheumatoid arthritis.

Prognosis: In spite of the vast amount of crippling and deformity to which rheumatoid arthritis leads, the prognosis is by no means as unfavorable as is generally supposed. It is not sufficiently appreciated that a certain proportion of patients recover more or less completely from the effects of the disease. More frequently, however, the process becomes arrested or quiescent at some stage in its course and the patient is able to carry on activities with only a small amount of difficulty. In a smaller proportion of cases the disease pursues a cruel and inexorable course, leaving the patient a helpless and hopeless cripple.

The prognosis depends on a number of factors but at all times it is extremely difficult or even impossible to forecast the turn of events in an individual patient. In the most favorable case a severe relapse may occur at any time, while on the other hand the most malignant example of the disease may suddenly become arrested. In general, those cases in which the onset is slow and insidious and in which fresh joints are involved from time to time present a more unfavorable outlook than those in which the onset is more acute. Unfavorable signs are (1) the development of severe muscular atrophy, cutaneous changes and subcutaneous nodules, (2) the persistence of a high sedimentation rate, (3) the development of constitutional symptoms such as general debility, loss of weight, anemia and tachycardia, (4) depression of spirits and loss of morale.

Few accurate statistics on the natural course of the disease are available, but in general it may be said that fewer than one fourth of the patients "recover," one half "improve" or the disease becomes "quiescent" and the remaining one fourth become progressively worse. Prognosis therefore in an individual must be guarded. It is particularly important that these facts should be borne in mind when one is assessing the value of any therapeutic regimen.

LABORATORY OBSERVATIONS

Roentgenologic Observations. — The roentgenologic pictures vary so much in different stages of the disease that it is convenient to describe the early and late stages separately.

Early: Early cases may show no roentgenologic changes but gradually characteristic changes occur. The most uniform of these is a generalized decalcification which affects the skeleton as a whole. As the result of the superimposed factor of disuse, the decalcification usually appears more prominently in the region of the affected articulations, but all the bones in the body participate in the process. Periarticular soft tissue swelling is the rule, but in later stages this may be replaced by atrophy of soft tissue. Effusion within the joint is a prominent feature. When present it appears roentgenographically dense, sharply outlined and fusiform.

Late: As the disease progresses, destruction of cartilage, with narrowing of the joint space, occurs and small areas of cortical erosion appear. These small areas of atrophic bone destruction, often referred to as "punched out areas," are a prominent feature of rheumatoid arthritis and must be considered in the differential diagnosis with gouty arthritis. As a rule, however, the areas are much larger in the latter disease. In advanced cases the articular surfaces may become fused through fibrous or bony ankylosis. Not infrequently there may be subluxations or dislocations, with or with-

out destruction of the ends of the bones. Coincidentally with these changes there may occur some degree of bone production, lipping and osteophytes. Such changes are, however, of a secondary nature and usually present a different appearance from the corresponding changes in osteoarthritis.

Sedimentation Rate.—The sedimentation rate of the erythrocytes constitutes one of the most distinctive features of rheumatoid arthritis. In the majority of cases it is greatly increased and, although exceptions occur, the increase is usually proportional to the severity and extent of the disease. By the Westergren technic the sedimentation rate in active cases usually varies from 30 to 100 mm. in an hour (normal 8 to 10 mm.), but values above 100 mm. are occasionally encountered. The rate tends to become slower as activity of the disease subsides and in the "burnt-out" stages of the disease normal values are commonly observed. Exacerbations are usually attended by an increase in the rate and remissions by a decrease. While there are exceptions to these generalizations, the test is sufficiently reliable to yield information of definite clinical value. In particular it is frequently of assistance in distinguishing cases of rheumatoid arthritis from osteoarthritis and "nonarticular rheumatism," in which conditions the sedimentation rate is usually within normal limits. The test also serves as a guide in determining the efficacy of therapeutic measures that may be employed. On the other hand, it should be emphasized that the test is of no value in distinguishing rheumatoid arthritis from a great variety of other conditions, such as rheumatic fever, acute infections and acute gout, in which diseases the sedimentation rate is usually also elevated.

TABLE 4.—*Essential Features of Rheumatoid Arthritis and Osteoarthritis*

	RHEUMATOID ARTHRITIS	OSTEOARTHRITIS
	Atrophic arthritis Proliferative arthritis Chronic infectious arthritis	Hypertrophic arthritis Degenerative arthritis Menopausal arthritis Senile arthritis
	CLINICAL DIFFERENTIATION	
Geographic distribution	Most common in temperate climates; rare in the tropics	Climate not a factor
Family history	Often a history of rheumatic fever or rheumatoid arthritis in an immediate member of family	Frequently a history of a similar form of arthritis in one or both parents
Past history	Occasionally a history of rheumatic fever; frequently of tonsillitis or sinusitis	Not characteristic; sometimes a history of trauma or faulty body mechanics
Age at onset	Any age; over 80 per cent between 20 and 50	Rare before 40
Mode of onset	Rarely acute; usually subacute or insidious; often accompanied by migratory pains	Insidious; not accompanied by migratory pains
Patient's general condition	Usually undernourished, anemic, and "chronically ill"; frequently slight fever (99+ F.) and slight leukocytosis	Well nourished, frequently obese; not anemic. No fever, no leukocytosis
Involvement of joints	Symmetrical and generalized; proximal interphalangeal joints especially involved	Usually weight bearing joints, spine, hips, knees; distal joints of fingers (Heberden's nodes)
Appearance of joints	Early: periarticular swelling, fusiform fingers Late: ankylosis, extreme deformity, ulnar deflection	Early: slight articular enlargement Late: more pronounced articular enlargement; limitation of motion usually slight; never ankylosis; Heberden's nodes
Muscular atrophy	Often pronounced, particularly in later stages	Not characteristic
Cutaneous changes	(1) Extremities frequently cold and clammy; skin atrophic and glossy; redness of thenar and hypothenar eminences (2) Psoriasis occasionally present	No characteristic features
Subcutaneous nodules	Present in 15 to 20 per cent of cases	Not present
	LABORATORY DIFFERENTIATION	
Agglutination reaction with hemolytic streptococci	Positive in about 50 per cent of typical cases	Never definitely positive
Sedimentation rate	Usually greatly increased; tends to return to normal as patient improves	Normal or only slightly increased
Roentgenologic appearances	Early: osteoporosis, periarticular swelling and joint effusion Late: narrowing of joint space, bone destruction, ankylosis and deformities	Early: no osteoporosis; slight lipping at joint margins Late: Marked lipping, osteophytes, narrowing of joint space, deformation of articular bone ends

Immunologic Tests.—A test of considerable theoretical importance in rheumatoid arthritis is the hemolytic streptococcus agglutination test. Unfortunately, however, the test is technically difficult and its usefulness is therefore limited. In about 40 to 50 per cent of cases the serums of rheumatoid arthritis patients agglutinate strains of hemolytic streptococci of Lancefield's group A in a characteristic manner. In order to be significant, agglutination should occur in a titer of 1 : 160 or higher and should be especially well defined in lower dilutions. With singularly few exceptions this phenomenon is not found in other diseases, and a positive test confirms the diagnosis with reasonable certainty. The test is of particular value in distinguishing rheumatoid arthritis from other forms of arthritis in which positive agglutinations are rarely encountered.

Antistreptolysin and Antifibrinolysin Titers.—The antistreptolysin and antifibrinolysin titer in rheumatoid arthritis serums are not characteristic. In this respect they differ from rheumatic fever serums, which usually show elevated values.

Other Laboratory Observations.—Other laboratory tests, such as the basal metabolic rate, gastric analysis, blood calcium, cholesterol and uric acid, do not give characteristic results in rheumatoid arthritis.

DIFFERENTIAL DIAGNOSIS

Criteria for diagnosis of rheumatoid arthritis have now been well established, and it is possible to distinguish this disease in most instances from other forms of arthritis. From the clinical picture and the laboratory aids, the typical case offers but little difficulty in diagnosis, and only the early or atypical case will cause trouble.

In any doubtful case, aspiration of the joint exudate should not be neglected. Such a procedure carefully made is not attended with danger. The joint exudate in rheumatoid arthritis is sterile, and the finding of pathogenic micro-organisms gives the diagnosis of any specific bacterial arthritis. On the other hand, the physical appearance of the exudate is not typical of any one form of arthritis.

The differentiation between rheumatoid arthritis and osteoarthritis is most important, since numerically these two groups account for approximately two thirds of all cases of chronic arthritis, and there is a great difference in their prognosis and treatment.

The essential features of each of these diseases are arranged in tabular form.

Gonococcic arthritis may be clinically confused with rheumatoid arthritis, especially if more than one joint is involved, and if a recent attack of gonorrheal urethritis is concealed or not recognized by the patient. Both of these diseases present rapid sedimentation rates of the erythrocytes. The diagnosis of gonorrheal

arthritis is confirmed by culture of the gonococci from the joint exudate, a positive gonococcus fixation test or the therapeutic response to sulfonamide derivatives or artificial fever.

Typical rheumatic fever does not present any problem in diagnosis, but there is a chronic type of rheumatic infection very similar to that of rheumatoid arthritis. The patient is usually afebrile. It is important to recognize this form of rheumatic infection, as the prognosis at least as far as the joints are concerned is much better than that of rheumatoid arthritis. The differential diagnosis is made by the laboratory. The blood in rheumatic fever presents significantly high antistreptolysin titers, and the streptococcus agglutination test is negative as a rule.

The clinical picture of acute gout will sometimes be similar to that of atypical rheumatoid arthritis. Usually in such a case the roentgenogram is not conclusive. A high blood uric acid or a therapeutic response to colchicum will serve to substantiate the diagnosis. Also in acute gout the joints return to normal between attacks.

A multiple arthritis can be associated with venereal lymphogranuloma. This occurs more commonly in Negroes and usually is milder than rheumatoid arthritis and responds to rest. The Frei test is specific for venereal lymphogranuloma.

Tuberculous arthritis is usually monarticular, and after a few months the roentgenogram of the joint shows readily identifiable changes. Injection of the joint exudate into a guinea pig is of value.

Syphilitic arthritis is rare and usually not confused with rheumatoid arthritis. One or only a few joints are involved. A positive Wassermann reaction with response to antisyphilitic treatment settles the diagnosis.

There is a type of arthritis often indistinguishable from rheumatoid arthritis which seems associated with focal infection such as chronic tonsillitis, dental abscesses, sinus infection and the like. Usually one or only a few joints are involved. This is a controversial subject, but a sufficient number of cases are encountered in which there seems to be a relationship between cause and effect, so that the subject cannot be dismissed.

The following four types of arthritis, while called by other names, clearly cannot be separated from rheumatoid arthritis, and until their exact etiology is discovered they will probably be classified by most observers under the general heading of rheumatoid arthritis:

1. Still's disease is a term applied to rheumatoid arthritis of children; as a rule these cases do not give a positive streptococcus agglutination test. The joints have the same appearance as in rheumatoid arthritis. The patient may have the typical subcutaneous nodule.

2. Felty's syndrome has been applied to cases of rheumatoid arthritis in which the liver and spleen are enlarged and leukopenia is present. A high percentage of these patients have positive streptococcus agglutination tests, and they may show the typical subcutaneous nodule. There is no valid reason for a separate grouping of these cases.

3. Psoriasis arthropathica is usually regarded as rheumatoid arthritis presenting psoriatic lesions. Psoriasis occurs in about 3 per cent of cases of rheumatoid arthritis. Here also separate grouping has not been definitely established.

4. Rheumatoid spondylitis (Marie-Strümpell arthritis, von Bechterew arthritis, spondylitis ankylopoietica) is regarded by many as rheumatoid arthritis of the spine, though the relationship is not clear, and this may be a separate entity. The sex incidence is ten or more males to one female, which is in sharp contrast to the more common type of rheumatoid arthritis.

TREATMENT OF RHEUMATOID ARTHRITIS

Although at the present time there is no specific cure, it seems possible to control the disease and change its clinical picture much as one controls a severe case of tuberculosis. Certain factors must be borne in mind in evaluating results of therapy:

1. Rheumatoid arthritis is a systemic disease; the patient must be treated as a whole, rather than have local treatment to his joints alone.

2. The disease is subject to spontaneous relapses and remissions.

3. Certain patients recover fairly quickly, and the last therapy used is often given the credit.

Realizing the difficulty of evaluating therapeutic claims, one should not be too dogmatic in stressing the value of any single measure. In general, however, the therapeutic agents may be divided into three groups:

1. Those which rest on sound principles and are of proved value.

2. Those about which optimistic reports have been published, but the value of which is still unsettled.

3. Those which are of questionable value or useless.

The first group consists of measures directed toward improving the patient's general health.

1. *Measures of Proved Value.*—(*a*) rest—general, local; (*b*) general nutrition—cod liver oil; (*c*) transfusions—iron; (*d*) removal of infections; (*e*) drugs: salicylates, barbiturates; (*f*) sunshine in an equable climate; (*g*) prevention and correction of deformities; (*h*) physical therapy and occupational therapy; (*i*) psychotherapy.

(*a*) Rest: Rest is the most important measure in the treatment of this disease—rest for the body as a whole and rest for the inflamed joints in particular. But, in prescribing rest, intelligence and insight are necessary. Many patients state that all they do is rest. Examination of such patients, however, will frequently show that they are tense and that their muscles are in more or less constant spasm. Many of them get only fitful hours of sleep: they are completely exhausted physically and mentally. The amount of rest varies from complete confinement to bed with hospitalization from six weeks to one year for the severe, to breaking the day with a two hour rest period for the mild, case. Each case must be considered on its own merits. For local rest, suitable splints are of great assistance.

(*b*) Nutrition: The majority of patients are underweight, undernourished and chronically ill. Every effort should therefore be made to maintain their nutrition in the best possible state. A well balanced diet of nourishing food is essential. In addition, liberal quantities of cod liver oil may be given.

(*c*) Transfusions: Hypochromic (secondary) anemia is common in this disease, and two or three transfusions of 400 cc. at regular intervals may be of distinct value.

(*d*) Removal of Infections: The patient with rheumatoid arthritis has as much right to the removal or treatment of abscessed teeth, diseased tonsils or sinus infection as any other person under the care of a physician. The treatment of such infections often helps the general health. Wholesale extractions of teeth,

tonsils or gallbladders and sinus operations should be discouraged. On the other hand, recent articles decrying the removal of foci of infections are apt to swing the pendulum too far in the other direction. A careful and conservative attitude is indicated.

(*e*) Drugs: Salicylates constitute the one group of drugs which are of symptomatic value. Iron in available form also may be administered. Occasionally it is necessary to resort to other drugs, such as barbiturates, for rest and sleep.

(*f*) Climate: Two facts seem to be well established with regard to climate: (1) the disease rarely occurs in the tropics, and (2) the incidence diminishes as one goes south. Once the disease is established, the effect of climate is not so clearcut, no satisfactorily controlled experiments having been made. Almost all one can definitely say is that, other factors being equal, it seems wise for rheumatoid patients to avoid the northern winters when possible.

(*g*) Prevention and Correction of Deformities: In no disorder of the joints is the prevention of deformities of greater moment. The deformities are too often due to neglect and, to a great extent, can be obviated. The advantages of correct posture, suitable splints and intelligent exercises can be fully learned only by experience in an arthritis clinic, or from the orthopedist. If ankylosis occurs, it is of the utmost importance that the affected joint become ankylosed in the optimal position for use. There is an enormous difference in function between a stiff knee flexed more than 20 degrees and one more nearly straight; between a hip joint and thigh fixed in more than 5 degrees of abduction, 10 degrees of adduction or 10 degrees of flexion and a hip in a nearly straight position; between a wrist and hand in plantar flexion and pronation and one in middorsal flexion half way between pronation and supination; between an elbow ankylosed in extension and one flexed at slightly more or less (depending on occupation) than a right angle; between an arm glued to the side of the body because the scapulohumeral articulation has been arthrodesed by the disease in this position and an arm abducted from 50 to 70 degrees which can move up or down with the scapula. In rheumatoid spondylitis, a suitable brace may prevent the spine from becoming rigid in a faulty position. The flexion deformities of the hands can usually be prevented by a simple splint which is worn for part of each day. In general, when stiffness and pain are severe, weight bearing should be restricted. When weight bearing is allowed, suitable shoes should be prescribed and worn consistently.

When deformities due to ankylosis have occurred, surgical measures may be of great value. Synovectomies may be useful. Such surgical procedures should be done only by the skilled orthopedist and usually when the activity of the disease has subsided.

(*h*) Physical Therapy: Physical therapy and spa therapy are useful for many types of arthritis. Baths and exercises in warm pools are sometimes helpful. Heat in the form of poultices, melted paraffin baths, baking lamp or diathermy is often comforting but is not curative. In fact, in the acute case local heat sometimes is not well tolerated. The most useful forms are generally stimulating treatments, as cabinet baths, massage and muscle exercises.

(*i*) Psychotherapy: The importance of psychic factors in this disease is great but has not been clearly defined. It is clear, however, that the attitude of the physician to the patient is most important. Encouragement to the patient and an optimistic interest in his illness will often help him to carry out his routine, whereas the reverse attitude will permit the patient simply to sit and develop deformities.

2. *Measures Which Have Had Optimistic Reports But of Which the Value is Still Undetermined:* (*a*) chrysotherapy; (*b*) vaccine therapy (nonspecific); (*c*) foreign protein therapy.

(*a*) Chrysotherapy: The use of gold salts has recently attained considerable vogue, more particularly in France and England. At the present time they are being given wide therapeutic trial in the United States. So many favorable reports have appeared that one cannot deny their beneficial effect. Most authors claim improvement in from 48 to 80 per cent of cases. Of these, perhaps 10 per cent can be regarded as cures. Many preparations of gold have been used. Some of these are used intramuscularly and some intravenously. It is now recognized that the salts of gold, like those of most of the other heavy metals, are not without danger. Unfortunately, the danger from the administration of gold salts has been considerable. Several deaths and other serious complications have been encountered, even in the hands of those most skilled in the use of gold salts. The incidence of important toxic reactions is about 17 per cent. The most frequent complication is dermatitis, which varies from pruritus and simple erythema to a severe exfoliative dermatitis. Fever, stomatitis, neuritis, diarrhea, vertigo, albuminuria, purpura hemorrhagica, granulocytopenia and aplastic anemia have been reported. The drug is usually given at weekly intervals in courses of ten injections, and the patient should be examined carefully before each injection for evidence of toxicity. The results, as far as cures are concerned, are far from miraculous, but in view of the large number greatly relieved a continuance of trial of this form of treatment under controlled conditions is both desirable and justifiable.

(*b*) Vaccine Therapy: The value of vaccine therapy remains unproved. The results reported vary widely. Probably the greatest value of this therapy lies in the weekly observation of the patient or in its psychologic effect. The vaccines most commonly used are autogenous vaccines, vaccines made of the common organisms of the upper respiratory tract or mixed hemolytic streptococcus vaccines.

(*c*) Foreign Protein Therapy: The value of foreign protein injections in the form of milk, typhoid vaccine and the like has not been definitely proved. Some observers are convinced that they are of definite value.

3. *Measures Which Are of Questionable Value or Useless.*—(*a*) vitamins in massive doses; (*b*) drugs as specifics; (*c*) endocrine preparations; (*d*) dietary fads; (*e*) fever therapy; (*f*) sulfur; (*g*) vaccines as a specific curative procedure; (*h*) bee venom therapy; (*i*) sulfonamide derivatives.

At the present time therapy with large doses of vitamin D should be regarded as of doubtful, if any, value. There are no specific drugs. Beneficial reports with endocrine preparations, dietary fads and colloidal sulfur have not been substantiated. Good results from fever therapy are likely to be only temporary. Bee venom injections probably have an effect similar to foreign protein; at least the most recent experiments indicate that such injections are of no value. While it was hoped that sulfonamide derivatives might give a new approach, so far results have been disappointing.

OSTEOARTHRITIS (HYPERTROPHIC, DEGENERATIVE)

ETIOLOGY

Primary osteoarthritis is essentially a disease of late adult life and is especially prone to occur in weight bearing joints and in joints in which a considerable amount of motion takes place. It is also prone to occur in the short, heavy, so-called herbivorous type of individual. Observation on postmortem material by various investigators has shown that before the age of 40 degenerative changes are relatively slight but that after the age of 40 they are increasingly common. As a result of these and similar observations on animals there is at present a rather widespread belief that the changes which comprise the pathologic picture of the disease are the result of the normal wear and tear of everyday use and that it is a natural phenomenon for the joints of man and of other animals to develop these changes as age advances.

However, there are certain characteristics of the disease which are not explained by this theory. One of these is the fact that occasionally the disease is well developed in patients who are relatively young—that is, in their middle thirties—while other people reach relatively advanced age and yet their joints show only slight osteoarthritic changes on clinical and roentgenographic examination. It is thus evident that, if the disease is due to wear and tear and nothing else, certain persons must be born with an articular joint structure which is definitely subnormal. In support of this theory the disease at times tends to be relatively frequent in certain families and it may be so frequent that a definite hereditary tendency is suggested. Also against the pure traumatic theory is the fact that one of the most frequent sites of the development of the disease is the terminal interphalangeal joint of the fingers; that is, the so-called Heberden's node. Not only is this a frequent site in which the disease cannot be explained by excessive use, but these Heberden's nodes frequently develop on the fingers of those who have done practically no manual work.

Removal of foci of infection has no influence on uncomplicated degenerative joint disease. Furthermore, the pathologic changes incident to this condition are not similar to those present in various forms of infection of joints. Consequently, the infectious theory has been almost entirely abandoned. Another theory is that of intoxication, it being believed that certain toxins were absorbed either through the gastrointestinal tract or possibly from foci of infection and that these toxins exerted a malign influence on the articular structures and caused the degeneration which resulted in the arthritic changes. This theory has been abandoned by most observers because of lack of any evidence to support it. It is now generally believed that arteriosclerosis is not the cause of the arthritic changes but is merely incidental because the disease tends to develop in people who are in the arteriosclerotic age.

Many still believe that there are other causes which tend to precipitate and to accelerate the progress of the disease. Since the primary change is degeneration of the articular cartilage, it is believed that in some way the nutrition of the cartilage is interfered with and that diet and endocrine factors may be responsible. It is probable that, with advancing years, persons of a stocky type tend to develop the disease more frequently than the tall, slender, so-called carnivorous type of persons.

No adequate explanation has been offered of the fact that a person may have advanced pathologic changes in various joints over a period of years and have no clinical symptoms, and then suddenly and apparently without warning and without any undue injury to the joint the clinical disease may develop in a particular joint and may persist with pain, swelling and disability over a considerable period of time.

Secondary osteoarthritis differs from the primary disease in that it affects single joints or occasionally joints on both sides which have been subjected to similar insults. It results from gross skeletal deformity, fractures and ligamentous injuries which produce abnormal strain or incongruity of the joint surfaces, and from long continued successive trauma to a given joint. The development of the hypertrophic changes is dependent on the continued use of the injured joint.

PATHOLOGY

The disease affects primarily the weight bearing joints, and the first pathologic change is a softening of the articular cartilage. On gross appearance the involved area has lost its bluish white, shiny translucent appearance, has become dull, and its surface is finely granular in appearance. Should pressure be made on such an area it will be found that this involved portion is softer than is the normal articular cartilage. It is to be noted that these primary areas of degeneration tend to occur in the central portions of the weight bearing joints—that is, far from the articular margins where it is believed that the nutrition is better because of the periarticular plexus of vessels—and also at the point where the articular surface receives the maximum amount of pressure.

Microscopically this soft area of cartilage is beginning to disintegrate. The surface tends to peel off in small flakes and the deeper layers of the cartilage tend to be fibrillated, being split into columns. It is believed that this peeling off and fibrillation of the articular cartilage is due to the lack of or deterioration in the quality of the cement substance which binds together the fibrous bundles which make up the cartilage matrix. When the surface of the cartilage flakes off and when the deeper layers become fibrillated so that the surface resembles the pile of velvet, many of the cartilage cells become necrotic.

In addition to necrosis of the cells which border the clefts in the cartilage and which border the surface, there is a tendency to proliferation of cells in the vicinity if the lacunae are still intact and there results an irregularity in the cellular structure; the dead cells disappear while neighboring living cells proliferate and form cell nests. As a result of the continued function of the joint with pressure and friction on the soft surface, the disintegrating cartilage is gradually worn away.

The change in the underlying subchondral bone consists of a proliferation of the bone-forming elements so that the haversian canals are narrowed and the trabeculae are thickened and the subcortical bone becomes more dense, invading the cartilage to a variable degree. Hence when the cartilage disappears the joint surface is composed of dense eburnated bone.

Concomitant with the changes in the surface of the articular cartilage and the subchondral bone there also occur changes around the margins of the joints. These changes are proliferative in character, both of the cartilage and of the subchondral and subperiosteal bone.

New bone is formed and tends to invade the cartilage over it or to form excrescences around the margins of the cartilage. At the same time there is a tendency to proliferation of the cartilage cells so that cell nests are formed, and there is probably a variable amount of metaplasia into cartilage of the adjacent connective tissues where the synovial and periosteal tissues merge gradually into the articular cartilage.

As a result, new tissue is formed the surface of which is cartilage and the base and interior of which are cancellous bone. These are the so-called osteophytes, or marginal lipping or hypertrophy, which give to the joints their characteristic roentgen appearance. There also may occur irregularities on the articular surface due to ecchondroses, or thickening of the articular cartilage, which in turn are supported by thickening of the subchondral bone. The interarticular fibrocartilages, such as the semilunar cartilages, and the interarticular ligaments, such as the crucial ligaments and certain tendons which are in intimate relation to the joints, also show degenerative changes with lack of cement substance, fibrillation of their structures and necrosis of their cells to a variable degree.

In some instances the synovial membrane becomes thickened and hypertrophied and may exhibit rather extensive villus formation and a considerable increase in vascularity. However, the proliferation of the synovial surface cells and the infiltration of subsynovial areas which are characteristic of rheumatoid arthritis and of arthritides which are due to specific infections of various types do not occur. In certain instances cartilage may be laid down in the synovial membrane. In others there is a fibrosis of parts of this structure and there may be considerable arteriosclerosis of the vessels in the deeper layers of the synovial surface. As a rule, the synovial fluid is normal in amount and in cellular content. However, this fluid may be increased in amount and contains slightly more cells than normal.

Since the exposed area of the subchondral bone is dead and contains no living cells and since there is no formation of granulation tissue, ankylosis between the opposing articular surfaces does not occur except rarely in the spine. However, limitation of motion in joints may occur as a result of the encroachment of formations of new bone around the margins of the articular surfaces. This is particularly true in the hip and spine and also in the ankle and fingers.

At the present time little is known as to the cause of the pain in osteoarthritic joints. Not only is the pain present in the articulations, but not infrequently the pain is present around the joint and may extend for considerable distances along the bone. This is especially true of the knee and it is not infrequent for the pain and tenderness to extend down along the inner aspect of the tibia for a considerable distance below the attachment of the ligaments of the knee joint. It is to be noted that, in people with osteoarthritis, laboratory examinations of blood and urine reveal nothing abnormal. The sedimentation rate of the erythrocytes is not usually increased, the blood picture and the blood chemistry are normal, except that in certain persons the cholesterol content is elevated. In elderly patients arteriosclerosis is common.

A not rare and quite crippling type of arthritis is that of the hip known as malum coxae senilis. This is really a severe type of osteoarthritis in which the head of the femur tends to become deformed while new bone is produced around the acetabulum with the result that the head no longer fits the socket, and not only is the patient handicapped by limitation of movement in the hip but the joint is painful after use. The changes in the joint of malum coxae senilis are like those of osteoarthritis, except that these changes not infrequently occur in persons in whom the other joints are essentially normal. They may occur at a relatively early age and in many instances they are due to incongruities of the joint or the result of either congenital anomalies or of injury or of disease in childhood, especially Legg-Calvé-Perthes disease, or of slipping of the femoral epiphysis or deepening of the acetabulum.

CLINICAL FEATURES

Onset.—Osteoarthritis may exist entirely without symptoms. As a rule, its onset is gradual and insidious and its course chronic. It is estimated that 97 per cent of the people who live beyond middle life develop characteristic joint changes with or without symptoms. In many, perhaps, most patients, there seem to be few gross physiologic disturbances.

Symptoms.—The early symptoms vary. Locally stiffness of one or more joints may be noticed, especially after rest, with improvement on moderate use during the day, but worse again the next morning; discomfort, even pain, in joints, produced by overuse or trauma and relieved by rest, fixation and heat; numb sensations in the fingers, especially the little fingers and hypersensitivity of the joints to any blow. Easy fatigability on exertion may be one of the general complaints.

Common early signs are slight enlargement of the joints of the fingers, knees and toes. These overgrowths on the margin of the joints, when they occur in terminal phalanges of the fingers, are called Heberden's nodes.

As time goes on, the disalinement of the joints results from the irregular degeneration and loss of cartilage. This is especially noticeable in the fingers, knees, hips and toes (hallux valgus).

Sometimes soft tissue swelling develops, because the chondro-osseous ridges cause joint irritation when used. There is rarely any joint effusion.

Natural History.—The natural history or clinical course of the disease depends on heredity, age, diet, obesity, circulatory disturbances, occupational strain and trauma, accidental injury and probably faulty body mechanics—all factors that basically underlie the disease and cause the remissions and exacerbations. As time goes on without treatment, more joints are involved. Great disability and pain may result if the spine, hips and knees are injured. Ankylosis does not occur except in the spine, where exostoses may fuse with one another. Motion decreases as these enlarging painful bone growths impinge.

Late Symptoms.—The changes in the spine may cause irritation and pressure on nerve roots in all parts of the spine (occipital, cervical, brachial, intercostal, inguinal, anterior crural, sciatic). The nerves may be painful but are not usually sensitive to touch, as in neuritis.

Roentgenologic Appearance.—Early in the disease little may be seen in the roentgenograms except sharpening of the margins of the joints. The hands usually show these minute changes first and are good guides to the nature of the disease process. The toes, knees and cervical bodies may show early spurring. As the disease progresses, the degenerative process in the articular cartilage increases and the chondro-osseous overgrowth at the joint margins shows more clearly. The joint space is narrowed by the degeneration of the

articular cartilage. The articular ends of the bone become deformed by the loss of cartilage, and the joint lines are changed by the overgrowths of bone masses. Flattening or mushrooming of the ends of the bones takes place. In the spine, "beaks" grow from the margins of the bodies and may impinge or unite. In the knees these exostoses may break off and form calcified loose bodies in the joint cavity. Sometimes cystlike cavities in the cancellous bone ends appear near the thin ebonized surface. Roentgenograms should always be taken of the hands even if they are symptomless, because they reveal early changes and are easy to interpret.

Laboratory Observations.—There are no characteristic abnormalities which can be determined by laboratory methods.

The blood is usually normal. Anemia is unusual. The sedimentation rate is normal except in the mixed types of arthritis. Agglutinins for hemolytic streptococci are absent in contradistinction to rheumatoid arthritis.

The metabolic rate is often lowered. The dextrose tolerance curve is not infrequently diabetic in type, as in rheumatoid arthritis.

Differential Diagnosis.—The diagnosis of osteoarthritis in its early stages is not difficult and is of great importance. The points of significance to remember are:

1. Even without important symptoms the history of a similar type of arthritis in the parents.
2. The age after 40 at about the time of the menopause in women.
3. The frequent history of trauma and the presence of faulty body mechanics.
4. The insidious onset of stiffness and vague joint pains.
5. The well-being of the patient without increased sedimentation rate, anemia, fever or other illness.
6. The involvement of weight bearing joints and the presence of typical Heberden's nodes.
7. The minute characteristic chondro-osseous growths seen in the roentgenograms.

Later the loss of motions, irregular deformities and actual marginal exostosis leave no doubt as to the nature of the type of arthritis with which one is dealing.

The differential diagnosis is sometimes complicated by evidences of mixed rheumatoid arthritis and osteoarthritis in the same person. The soft tissue swelling in cases of rheumatoid arthritis may obscure the Heberden's nodes and bony exostoses which are seen in the roentgenogram. Differential diagnosis must be made between osteoarthritis, gout and other pathologic conditions of the bones and joints, such as osteitis deformans (Paget's disease), Charcot's joints, osteitis fibrosa, neoplasms and chronic osteomyelitis (Brodie's abscess). Osteoarthritis may of course be found in conjunction with all these. Osteoarthritis in such cases may be considered nature's attempt to repair damage to the margins of the joints.

Principles of Treatment.—Treatment must be divided into general and local types. Osteoarthritis is a constitutional disease. From the constitutional angle but little can be done to change the hereditary tendency except by anticipation. Environmental factors are, however, susceptible to change, such as habits of living, type of exercise and work, overexertion, bad habits of posture, dietary faults and fatigue. Faulty postural habits are important in causing trauma of the weight bearing joints.

Treatment includes:

(*a*) The correction of body mechanics (posture) by proper rest positions, by corrective exercises for the body and by orthopedic braces and supports.

(*b*) The maintenance of good circulation. The blood supply of the joints must be increased by all possible means if the permanent joint tissue changes are to be minimized. Rest and freedom from worry are important.

(*c*) Dietetic errors, overexertion and gastrointestinal dysfunction all require steady care.

Vitamin deficiencies must be controlled and the patient restored to the highest state of well-being of which he is capable. The principle in treatment beyond this is the removal of exciting causes to prevent the progress of the disease and the relief of pain and limitation of motion in the joints.

Overfatigue must be avoided. A conservative attitude should be taken toward the removal of foci of debatable significance.

Glandular therapy may have a place in the treatment, as sometimes a low metabolism is found and the judicious use of thyroid may be indicated. Its use, however, should be carefully controlled.

The diet should be well balanced, containing adequate though not excessive calories in order that the patient may not gain weight, as weight adds to the traumatic strain on the joints. Consequently concentrated starches and sweets as a rule should be decreased and the diet should be adequately balanced. There is no specific diet for osteoarthritis.

Vaccines seem to have no place in the treatment of osteoarthritis.

Pain may be controlled by the use of acetylsalicylic acid or other salicylates.

The local treatment of joints is aimed to reduce pain. Heat and massage with moderate voluntary exercise are useful in improving the local blood supply. One should, however, avoid massage of the tender osteoid tissue covering bony growths at the margins of the joints, as it is apt to cause more irritation and so increase their size and sensitiveness. Voluntary exercise is much better than passive exercise for this reason, though passive exercise may decrease the stiffness. Excessive exercise increases the stiffness. Local counterirritants may be used to relieve pain and cause hyperemia, such as analgesic balm and oil of wintergreen. Roentgen treatments have been used with reported relief of the pain in some joints, particularly the knees or the hips. They do not, however, change the bony exostosis but through the relief of pain may increase the range of motion if the chondro-osseous edges are no longer sensitive.

Osteoarthritic joints require protection. Rest is essential, and, since this is a nonankylosing type of arthritis, complete rest in casts may be given without danger of permanent stiffness. Usually the joints are more limber after rest in bed or after the removal of plaster splints than before the rest was given. The hips may become flexed and abducted, the shoulders may lose their excursion in abduction and the spine may become bowed; but, in general, the deformation of joints that occurs in osteoarthritis is due to the changes in shape of the articular bone ends or of the sockets of the hips and the shoulders. Correction of deformities requires orthopedic appliances such as foot supports, which make walking more comfortable, laced elastic knee caps and knee braces to relieve painful knees, and belts, reinforced

special corsets and back braces with abdominal supports, which often relieve backache and sciatic pain.

Surgery may play a small part in the region of the knees and hips. The removal of loose bodies (joint mice) is usually confined to the knees and may give relief from pain and instability, particularly when they have been caught between the joint surfaces.

Operations on the hip, such as the removal of the superior ridge of the acetabulum and the vitallium cap for the hip, have been used in order to relieve the pain. Arthroplastic operations are not particularly indicated except in involvement of the hip in which limited motion and adduction cause pain and deformity, as in "morbus coxae senilis." The surgical removal of bony overgrowth is to be discouraged, for its relief is only temporary. Forcible manipulations are contraindicated, for, although greater freedom of motion and relief of pain may be gained for a few weeks, larger overgrowth and disability eventually result.

Prognosis.—The prognosis for the relief of symptoms of the joints and the control of the generalized disease is good. It is not inevitably a progressive disease. The hyaline articular cartilage, once destroyed, does not regenerate completely. Long-standing bony or calcareous deposits about the joints cannot be made to disappear, though their sensitive osteoid caps may shrink in size and become almost painless. However, there remains the permanent handicap of more or less imperfect joints, but imperfect joints may be made less painful by treatment. It is often surprising as the disease is controlled and support afforded to observe how slight is the handicap imposed by the joints in which roentgen examination reveals such extensive changes as to suggest disturbance of function and almost complete disability. An arrested generalized disease, protective appliances and disciplined observance of instructions make possible a life that is often entirely satisfactory to the patient.

GONOCOCCIC ARTHRITIS

Gonococcic arthritis is a common type of specific infectious arthritis. Until the advent of artificial hyperthermia and the sulfonamides, gonococcic arthritis crippled at least one fourth of its victims. Such crippling can be prevented if the disease is recognized early and treated adequately.

INCIDENCE

The articular complications of gonorrhea occur most frequently during the third decade, the period when gonorrhea is at its peak; however, no age group is exempt. Approximately 2 per cent of those with gonorrhea have arthritis, men being afflicted twice as frequently as women. This higher sex incidence is due in part to the anatomic differences of the genito-urinary tracts and the higher incidence of gonorrhea in males.

ETIOLOGY

The responsible etiologic agent for this type of arthritis is the gonococcus. It is frequently isolated from the primary focus, less commonly from the articular structures (25 per cent of the cases) and least of all from the blood stream. In most patients the arthritis begins two to four weeks after the appearance of the initial infection; therefore one is usually able to isolate gonococci from the original focus. In adults the primary focus is generally found in the genito-urinary tract, in children in the conjunctivas and the vaginal and rectal mucous membranes. From these sites the infection spreads by way of the lymphatics and venous channels into the blood stream. A bacteremia results and, if the organisms are not killed by phagocytosis or the natural occurring bactericidal antibodies of the blood, they may localize in various tissues, showing the most evident affinity for the mucin-containing structures such as the joints, tendon sheaths, bursae and eyes.

PATHOLOGY

The acute phase of the disease is characterized by a diffuse hyperemia, edema and infiltration of the synovial tissues with inflammatory cells, predominantly polymorphonuclear leukocytes. In the severe forms the synovial fluid becomes infected and septic; the synovial lining tissue proliferates and may extend on to the margins of the articular cartilage, the surface of which may show areas of destruction in consequence of enzymatic action. With subsidence of the infection, complete resolution may take place or scar tissue may replace the granulation tissue. In the mild and subacute types the inflammatory reaction is less severe, the joint fluid is rarely infected, and the articular cartilage escapes destruction. These pathologic changes are similar to those seen in any type of pyogenic arthritis excepting that due to the tubercle bacillus. At present there is no evidence to support the hypothesis that gonococcic infections are ever responsible for a chronic, progressive type of arthritis such as rheumatoid arthritis.

SYMPTOMATOLOGY

The acute onset is frequently preceded by a chill or chilly sensations. Acute genitourinary trauma caused by instrumentation, prostatic massage, sexual overactivity, pregnancy and injudicious self treatment may be the cause of the initial invasion of the blood stream. During and following the bacteremic phase there is a moderate intermittent fever, the temperature rarely going above 102 F. Metastatic phenomena such as iritis and petechiae may be observed. The arthritis is at first polyarticular and migratory in nature. This phase lasts from three to seven days. The infection finally localizes in one or more of the large joints. No joint is exempt, although the knee, ankle, shoulder, wrist and hip, in the order named, are most commonly involved. Ligamentous and tendinous involvement is frequent. The tendons about the wrists and ankles and the ligamentous attachments of the os calcis and patella are most commonly involved. In many patients acute and chronic joint trauma favor the final localization of the organisms. The resulting pain, swelling, redness and heat are often more intense than the febrile reaction and leukocyte count would indicate.

ASSOCIATED FEATURES

Conjunctivitis may be encountered in gonococcic arthritis and has been reported as being present in from 10 to 20 per cent of the cases. Iridocyclitis, a serious complication in that permanent impairment of vision may result, is observed. Keratodermia blennorrhagica, acute hemorrhagic glomerulonephritis, pyelonephritis and pyelitis are rare complications. Gonococcic endocarditis and meningitis, other rare complications, were almost always fatal before the advent of chemotherapy.

LABORATORY OBSERVATIONS

Blood.—Leukocyte counts varying from 8,000 to 30,000 are observed; they are usually between 10,000 and 15,000. Except for a moderate degree of secondary anemia in the severer infections, the red blood cells and hemoglobin show no changes.

Bacteriology.—Recent experience reveals that cultures are superior to smears, especially in subacute and chronic infections; both, however, should be made from material obtained from the primary focus and the synovial fluid. The most satisfactory medium is blood ascitic fluid agar incubated at 36 C. in an atmosphere of 20 per cent carbon dioxide.

Serologic Tests.—A positive gonococcus complement fixation reaction is presumptive evidence that the arthritis is due to the gonococcus and may be the first intimation of the true nature of the disease. Although the first test may be negative, repeated tests show positive results in 90 to 98 per cent of patients with gonococcic arthritis.

Sedimentation Rate.—During the active stage of arthritis the sedimentation rate of erythrocytes is considerably increased but frequently returns to normal within three to six weeks after the institution of adequate treatment with sulfonamides.

Synovial Fluid.—A pronounced reduction of the fasting synovial fluid sugar content suggests that the fluid contains organisms. Leukocyte counts, done with a blood leukocyte pipet with isotonic solution of sodium chloride as the diluent, are under 30,000 in sterile fluids but in fluids with positive cultures are usually above 30,000 with 90 per cent or more polymorphonuclear leukocytes.

Roentgenologic Examination.—Soft tissue swelling and joint widening are the only abnormalities observed during the first eighteen days of the disease. Following this, bone atrophy becomes apparent in the roentgenograms of the moderately and severely involved joints. Bone destruction may occur in the severe untreated cases. Periostitis adjacent to infected joints is seen in approximately one fourth of the cases. Except for the rapidity and extensiveness of the bone destruction, there is little to distinguish gonococcic arthritis from other forms of septic arthritis.

DIFFERENTIAL DIAGNOSIS

Only when the cultures of the synovial fluid, genital tract and blood are negative as well as the complement fixation tests is the diagnosis difficult. It may be necessary to differentiate it from rheumatic fever, atypical rheumatoid arthritis, gout, tuberculous joint disease and other forms of specific infectious arthritis. Careful evaluation of the history, a detailed physical examination, the results of therapeutic trials with salicylates, the presence or absence of electrocardiographic changes, uric acid determination of the serum, careful bacteriologic studies, animal inoculation when indicated and the clinical course of the disease will enable one to make the correct diagnosis in most instances.

COURSE AND PROGNOSIS

The duration and severity of the arthritis depend on the virulence of the particular strain of gonococcus and the resistance of the host. If the infection localizes in the periarticular structures and the synovial fluid remains sterile, complete recovery without residual joint change is highly probable. If specific therapy is not administered early to patients who have infected synovial fluids, permanent joint destruction, with or without ankylosis, will occur in a high percentage. Specific therapy should be instituted as soon as the diagnosis is made because bone destruction may appear within three weeks, and once this has appeared permanent joint damage cannot be prevented.

TREATMENT

Specific therapy is of two types: fever treatment and sulfonamide compounds. Sulfonamide derivatives require less apparatus and are less dangerous for general use and are much less expensive than is fever therapy. The only contraindication to their use is a hypersensitivity to the drugs. Proper administration of one of these drugs will sterilize an infected synovial fluid within twenty-four to seventy-two hours. The highest percentage of cures is obtained when these drugs are given in adequate amounts. This can be achieved readily if the drug is administered every four hours day and night and the fluid intake kept constant (approximately 2,000 cc. per twenty-four hour period). Adequate blood levels must be maintained for the particular derivative employed. In most cases striking improvement is noted within twenty-four to seventy-two hours. Further study is necessary to determine which of these sulfonamide compounds is most effective. If chemotherapy does not bring about a cure, fever therapy alone or in conjunction with one of the sulfonamide derivatives can be employed.

GOUT AND GOUTY ARTHRITIS

Gout is a disease of unknown etiology characterized by (1) an arthritis which is at first acute and recurrent but which later may become chronic, (2) a supposed abnormality in purine metabolism evidenced by the abnormal disposition of uric acid, (3) hyperuricemia, which is often transient at first but later generally becomes chronic, (4) eventual deposition of sodium urate crystals in articular, periarticular and subcutaneous tissues, sometimes also in the kidneys and urinary tract, and (5) frequent terminal vascular lesions in the kidneys, less often in the heart and brain.

More than 90 per cent of gouty patients are men; they are usually more than 30 years of age. Many, but by no means all, gouty patients are of more than average weight; many do ingest excessively meats and alcoholic drinks, but gout may affect vegetarians and teetotalers. Although excessive intake of purines and alcohol may provoke attacks of gouty arthritis in those who already possess the fundamental (unknown) cause of the disease, purines and alcohol are no more the cause of the underlying gout than are sugars and carbohydrates the cause of diabetes.

DESCRIPTION OF AN ACUTE ATTACK OF GOUTY ARTHRITIS

Most patients do not notice prodromes to an acute attack; others notice nausea, indigestion or dyspepsia, melancholia, nocturia or polyuria, irritability or vague muscular symptoms; others experience euphoria or a ravenous appetite. The first articular symptoms may occur at any hour. Sometimes the patient may be awakened with pain in the early hours of the morning (2 to 4 o'clock), but more often pain is first noted when on awakening in the morning the patient first moves his foot or other affected joint. Within a few hours the affected joint or joints usually become red or dusky, swollen and exquisitely tender to touch. Jarring of the bed may provoke an intense paroxysm of pain. Weight bearing is impossible in the more severe attacks. Pain is often worse at night. Moderate fever may or may not be present. In early attacks usually only one joint is affected; in about 50 per cent of cases the metatarsophalangeal (bunion) joint of a great toe is affected initially, but other toes or regions of the foot or ankles, knees, hands, wrists or elbows are commonly affected;

joints of the spine, hips and shoulders are rarely involved. If the attack is untreated, or not treated as gout, it may last several days or weeks but if properly treated it may subside rapidly. Swelling and discoloration subside; pain, tenderness and stiffness disappear and the joint becomes normal.

DIAGNOSIS OF GOUT AND GOUTY ARTHRITIS

Characteristic Pattern of Gouty Arthritis.—In contrast to most other forms of arthritis, articular function is recovered completely between attacks. As time goes on, the severity and frequency of the attacks of acute arthritis often increase; in some cases late in the disease the arthritis becomes chronic.

Provocatives.—Attacks are often induced by unusual exercise, surgical operations, dietary and alcoholic indiscretions or excessive use of fats; also by the use of certain medicines—liver extract, ergotamine tartrate (gynergen), dehydrocholic acid (decholin), thiamine hydrochloride (vitamin B_1) in excessive amounts, mersalyl (salyrgan). When acute arthritis develops after such experiences or medication, gout should be suspected.

Blood Uric Acid.—An increase in the content of urates in the blood is one of the most characteristic findings in gout, but in some cases hyperuricemia is not present until several attacks have occurred. The diagnosis of gout must be considered seriously in any case in which the concentration of uric acid is more than 5 mg. per hundred cubic centimeters of whole blood, especially if one or more short attacks of acute arthritis have occurred; however, hyperuricemia alone is not diagnostic of gout.

Tophi.—Tophi containing sodium urate crystals are found only in gout. They occur most often about the margins of the ears and in the olecranon region, less often around peripheral joints. To certify that a tophus is truly present, its contents should be removed, smeared on a glass slide and examined under the microscope for the typical needle-like crystals. The murexide (chemical) test can be used for confirmation.

Roentgen Examination.—During the early stages of the disease roentgenograms of affected joints may reveal nothing abnormal but, as attacks recur, osseous tophi make their appearance and are noted as punched out areas in juxta-articular bones of the fingers and toes especially.

Therapeutic Test.—Colchicine, if given in sufficient doses, will usually relieve spectacularly the acute manifestations of gouty arthritis. Other forms of arthritis are unaffected by colchicine.

TREATMENT OF GOUTY ARTHRITIS

The underlying condition, the gout per se, is not curable at present. But certain treatments can relieve rather promptly the acute attacks, and other measures can be used in an attempt to reduce the number and severity of subsequent attacks.

Acute Attacks.—Colchicine, the active ingredient of colchicum, is "specific" for acute attacks. Colchicine is preferable to the wine and tincture of colchicum, which often vary in potency and tend to deteriorate. To obtain relief full doses of colchicine must be used: an initial dose of 2 tablets (each $\frac{1}{100}$ to $\frac{1}{120}$ grain, or 0.65 to 0.53 mg.) followed by 1 tablet every one or two hours until the pain is relieved and/or gastrointestinal symptoms (nausea, vomiting or diarrhea) appear. Then the administration of colchicine should be stopped.

The local application of hot water packs or warm glycerin packs helps to relieve pain; a few patients obtain more relief from cold packs or an ice bag.

Acetylsalicylic acid (60 to 80 grains, or 4 to 5.2 Gm.) or sodium salicylate (60 to 100 grains, or 4 to 6.6 Gm.) also should be prescribed daily during the attack, not only to aid in relieving pain, but to reduce the hyperuricemia. If colchicine and salicylates do not give adequate relief, cinchophen (7½ grains, or 0.5 Gm., three or four times a day) should be used in place of the salicylates for a few days.

The diet during attacks should be free of purines, high in carbohydrates and purine free proteins (milk, eggs, cheese) and low in fats.

TREATMENT FOLLOWING THE ACUTE ATTACK

Few patients are able to avoid recurrences of gouty arthritis unless a definite "interval program" is persistently followed.

Diet.—This should be low in purines, high in carbohydrates, adequate in vitamins and protein (especially the purine-free proteins—milk, eggs, cheese) and low in fat. Chicken, fish and nonglandular meats are relatively low in purines and can be prescribed once a day. Other meat should be served only three or four times a week. Alcohol should be avoided entirely if at all possible. Purine-free foods can be eaten freely.

Purine-Free Foods.—These include fruits of all kinds, milk, eggs, cheese, bread (except whole grain), vegetable soups (made without meat), caviar, shad roe, artichokes, beets, broccoli, Brussels sprouts, cabbage, carrots, celery, corn, cucumber, eggplant, endive, lettuce, okra, parsnips, potatoes, pumpkin, rutabagas, sauerkraut, string beans, summer squash, Swiss chard, tomato, turnips, hominy, macaroni, noodles, spaghetti, cereals which do not contain whole grain and pies (except mincemeat).

Foods to Be Avoided at All Times.—These include sweetbreads, anchovies, sardines, calf and beef liver, beef kidneys, brains, meat extracts, gravies and meat soups.

Medication.—Acetaylsalicylic acid (60 to 80 grains, or 4 to 5.2 Gm.) or sodium salicylate (80 to 100 grains, or 5.2 to 6.6 Gm.) should be used daily for three consecutive days each week indefinitely in an attempt to control hyperuricemia. Such medication is usually fairly effective; if it is not, cinchophen (7½ grains, or 0.5 Gm., three times a day) may be used instead, three consecutive days a week, but there is some danger of cinchophen toxicity. To prevent precipitation of excess urates as gravel in acid urine enough alkali should be given daily to keep the urine slightly alkaline: sodium bicarbonate (20 to 35 grains, or 1.3 to 2.3 Gm.) or potassium citrate (15 to 30 grains, or 1 to 2 Gm.) three times a day generally suffices.

Exercise.—Mild, customary exercise is permissible but undue physical stress such as may be involved in vacation trips may provoke an acute attack.

Tophi.—Large tophi may ulcerate; occasionally they become infected. These eventualities can be avoided by the early excision of tophi in which ulceration is impending. When débridement is done thoroughly, prompt healing occurs.

COMMENT

Joint pain coming on shortly after an operation, unusual exercise, dietary and alcoholic indiscretions or excessive use of fats should make one suspect gouty

arthritis. Recurring arthritis with symptom-free intervals is of great diagnostic help. Before 1928 gout was considered a rare disease in America, but since then many cases have been recognized.

SUMMARY

In the foregoing discussion an attempt has been made to avoid controversial points while at the same time presenting the essential features of the more common forms of chronic arthritis.

A clear understanding of the therapeutic problems requires as a prerequisite accurate differential diagnosis, understanding of etiologic and pathogenic factors involved and patience and time, since most forms of arthritis are chronic in nature and require long continued treatment in the same manner as does tuberculosis, syphilis or diabetes.

Special Clinical Article

AVIATION MEDICINE IN THE ROYAL CANADIAN AIR FORCE

CLINICAL LECTURE AT ATLANTIC CITY SESSION

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Perhaps no other branch of medicine has advanced as rapidly and with the same degree of productiveness as has aviation medicine. The foundations for its spectacular advance were laid on necessity and, today, from an obscure sideline, aviation medicine has assumed the role of a new medical specialty which, in its most practical form, is simply the practice of industrial medicine in relation to personnel engaged in the business of flying aircraft.

The effectiveness of an aircraft is definitely limited by the least efficient member of its crew. Such effectiveness can be assured initially only by adequate selection of aircrew personnel.

The navigator, the pilot, the air gunner, the wireless operator, all have specific duties to perform while in the air; consequently the standards, medical (including psychologic), educational and so on are different for the different aircrew trades. The medical standards for fitness for flying have been laid down, not arbitrarily, but as a result of experience and investigation, and in all cases are based on service requirements of the aircrew.

SELECTION AND TRAINING

Although the medical examination is supposedly a rigid one, over 75 per cent of applicants are successful. Selection of the aircrew goes far beyond this single stage of medical examination and includes many special selection procedures, the discussion of which is outside the scope of this paper. However, as a result of such special selection, mentally and physically healthy young men are started on their training program. It is again the responsibility of the medical officers to maintain them in this condition throughout their service careers. Thus it is that aviation medicine may best be divided into two main divisions: selection and maintenance. That selection and maintenance cannot be entirely separated is obvious, since the effectiveness of selection reflects itself in the non-combat wastage during training and operations. Again the problems which are evident from a maintenance point of view become more or less important, depending on the degree of consideration which any one aspect may have received at medical selection boards in the selection of the aircrew for specific duties. Therefore a balance has to be maintained between availability of personnel, selection procedures and operational requirements. For instance, it may be possible to select, with a high degree of accuracy, personnel who are capable of withstanding relatively high altitudes. By other procedures it may be possible to select personnel who have excellent night visual capacity. But the latter individuals may not be in the group with high altitude tolerance. Thus selection procedures within previously selected groups for special factors must be carried out. This is selection based entirely on operational requirements.

It must be remembered that the training program is an intensive one; courses start and are completed on schedule so that the next course of trainees may follow in rapid succession. It is obvious that many healthy, normal young men will not become successful pilots or navigators, just as obvious as is the fact that there are many persons who train as lawyers, as doctors, many who would like to be farmers or good golfers but who just haven't got that something which is necessary to make a success in a special type of work.

There is, again, a tremendous difference between learning to fly an aircraft for pleasure and being capable of flying a service aircraft in combat—just as much difference as there is in learning to play golf for pleasure and being expert enough to play tournament golf for a livelihood. To say that a pilot trainee is a failure because he has had his training discontinued is not only unfair but stupid.

Almost all whose training is interrupted are remustered for other aircrew duties and most of them do well in their new courses. The medical officers play an important role in the readjustment and successful remustering of these men.

The problems of selection are numerous; the importance of selection is apparent. Our responsibilities follow in maintaining the effectiveness initiated through adequate selection.

MAINTENANCE

One aspect of the main division of maintenance of air force personnel is that concerned with public health and preventive medicine. In the Royal Canadian Air Force, as in all other branches of the services in almost all countries, inoculations and vaccinations prevent the great morbidity and mortality experienced in campaigns and wars prior to the war of 1914-1918. It is interesting to note that, in all Royal Canadian Air Force personnel since the beginning of the war, only 2 cases of typhoid have developed and no cases of tetanus have occurred in spite of training accidents.

All Royal Canadian Air Force personnel are given Dick and Schick tests. It was found that 30 per cent of personnel were Dick positive and 50 per cent were Schick positive. All who are Dick and Schick positive receive immunization inoculations. Immunization against diphtheria has been spectacularly successful.

In order to control, as well as possible, tuberculosis in the service, no enlistment or appointment can be made unless the routine 6 foot roentgenogram reveals

Read in the General Scientific Meetings at the Ninety-Third Annual Session of the American Medical Association, Atlantic City, N. J., June 8, 1942.

a satisfactory chest condition. Admitting that the x-ray technic is not infallible in diagnosis, nevertheless tuberculosis of the chest has been reduced, at the moment at least, to a negligible problem. Roentgenograms of the chest are again taken on all personnel who are retired or discharged from the service.

The seriousness of the venereal disease-gonorrhea problem cannot be underestimated, and our figures show that there are 2 new cases of venereal disease-gonorrhea per thousand men monthly. With the advent of sulfonamide drug therapy the treatment has been greatly simplified, but it requires that all men who have been treated be prohibited from flying since, among other things, a decrease in the oxygen saturation of the blood usually occurs. This may be sufficient to produce anoxia at an altitude otherwise safe without the use of oxygen equipment.

Since the personnel in large operational aircraft almost always work together as a crew, sickness constitutes a relatively more serious situation in the air force than in the other services. This is particularly true in the case of preventable illnesses, such as venereal disease, wherein the individual fails in his responsibility not only to himself but to other members of his crew. As far as the Royal Canadian Air Force is concerned, venereal disease is not a moral issue; it is a clinical disease, and its prevention and treatment constitute a medical problem in the same manner as does the contagious common cold.

Many preventive measures for the control of disease have been instituted. Most of the control measures have been eminently successful, but still 40 per cent of admissions to station hospitals and 25 per cent of days care is accounted for by nonspecific respiratory infections for which there appears to be no specific treatment. On the other hand, injuries account for only 7.5 per cent of all admissions and 10 per cent of all hospital days, a great proportion of which are occasioned by nonflying accidents.

Considerable use has been made of electrocardiology, and the practical application of electroencephalography, instituted as a routine procedure in April 1940, has proved to be of considerable significance not only in selection but in maintenance as well.

The relationship of aniseikonia to flying performance in the landing of aircraft has been investigated over the past eight months. Two groups were studied. In the first group were trainees who ceased training because of landing difficulties, and in the second group there were experienced pilot instructors. The amounts of aniseikonia were found to be very trivial, and no practical correlation to performance could be ascertained in the groups studied.

RESPONSIBILITIES OF THE MEDICAL SERVICE

The concept of the duties and responsibilities of the medical services in association with aviation have undergone many changes—changes which are logical and which have resulted in increased efficiency of the flying personnel. Let us consider some of the responsibilities. Simply because a ration is laid down, either planned or abstracted from books or journals on paper, it cannot be assumed that adequate nutrition will be supplied to the personnel consuming those particular rations. Why is this? Because (1) the men may not be receiving the exact ration as planned or (2) the loss of nutritional elements in cooking may be tremendous; in either case an inadequate diet is consumed. That these two conditions are actually encountered has been amply demonstrated and subsequently corrected.

Records of previous wars and campaigns have indicated that vitamins A and C are particularly apt to be available in inadequate amounts for normal health and efficiency. Of course, vitamin B_2, riboflavin, was an unknown identity then, but the distribution of this vitamin in foods indicates that unless milk is provided in fairly large quantities there will be an inadequacy.

In modern mechanized warfare (navy, army and air force) it has been found that the optimal requirements of certain vitamins is probably in excess of that ordinarily considered adequate for normal civilian occupations. One is apt to consider the study of such a problem in relation to the abnormal environments to which certain personnel are exposed and neglect it as a problem of general health and efficiency of personnel. This type of work has become a phase in the newer concept of aviation medicine.

Any air force is composed not only of the aircrew, to which the glamour is attached, but also of the highly important and skilled ground crew. Therefore the problems of the ground crew trades must not, as they too frequently are, be neglected. The remarkable changes in aircraft design which have occurred since the last war have led to changes in methods of construction and of materials used. At the present time potential health hazards are involved in the servicing of aircraft which were not encountered previously. Dopes, cleaning solvents and spray paints are some of the factors which necessitate an appreciation of the principles and practices of industrial hygiene and constitute another phase of our responsibility in aviation medicine. Nor does this aspect close with a consideration of possible toxic effects of these materials on the ground crew: the prevention is also a responsibility of the medical services.

In a similar manner we must consider the so-called carbon monoxide problem. Unfortunately most of our flying personnel are inclined to be carbon monoxide conscious and in many instances carbon monoxide has been tagged as the causative factor in aircraft accidents without adequate proof of its presence in dangerous concentrations in the blood of the personnel involved. It is well known that man can tolerate fairly high concentrations of carbon monoxide, but its significance in relation to aviation medicine is increased by the fact that it materially lowers the oxygen saturation of the blood. The oxygen saturation of the blood is the all important physiologic factor in altitude flying, and when carbon monoxide has decreased this value anoxia may result at an otherwise tolerated altitude.

Although the correction of the defects in the aircraft which may be responsible for the contamination of the cockpit air by carbon monoxide is purely an engineering problem, the medical officer has a distinct responsibility and must cooperate with the aeronautical engineers in order to safeguard the health and efficiency of the personnel.

A few years ago few people would have admitted that the development of flying clothing and other protective ancillary equipment was in a large measure the responsibility of the medical personnel of the air force. Consider the problem from this point of view. The heat regulation of the body is purely a physiologic function, the body being able, within limits, to compensate for changes in environmental temperatures. However, beyond these certain limits the heat production and heat loss are no longer maintained in

equilibrium, and physiologic, mental and physical disturbances result. Adequate protective clothing will supply the additional thermal insulation necessary to maintain adequate heat regulation. This is true only as a generalization. As one increases the altitude the temperature, in general, decreases at the rate of approximately 3 degrees F. per thousand feet until an altitude of some 30 to 35 thousand feet is reached, at which time the temperature has decreased to about —67 F. On the other hand, ground temperatures which are encountered by the aircrew may vary from —60 F. in northern Canada and Alaska to 120 F. or more in tropical regions. Add to that the fact that the inside temperature of a metal aircraft, standing in the sun in a tropical country, may be, because of reflection, as high as 140 F. The aircrew must in many instances climb into an aircraft under these hot conditions clad in clothing which, in a relatively few minutes, will protect him from the extreme cold of high altitudes.

Another consideration which is too frequently neglected is that the degree of thermal insulation required for different areas of the body differ considerably. In order adequately to protect an individual from cold, this fact must be taken into consideration. For instance, if the hands and feet are maintained at slightly higher temperature than the rest of the body, a vasodilatation takes place which produces excess sweating over the whole body, thus increasing heat loss and after several hours producing considerable fatigue. This indicates that the problem of designing adequate flying gloves and flying boots must be done in connection with the development of flying suits.

From statistics on the incidence of frost bite in the Royal Canadian Air Force during the past winter we find that among Canadians the fingers are most commonly affected, whereas with the Royal Air Force, New Zealand and Australian, and Americans from the Southern states the ears, hands and feet are also affected. The latter individuals are affected chiefly because of a lack of respect for cold, sunny Canadian winter days, which is gained with a few weeks experience. The effect on the fingers, though, is a problem. It is caused by two different factors, both of which can be remedied.

In the first instance certain members of the aircrew must, in order to carry out their specific duties, remove their heavy flying gloves. A few minutes exposure, while taking an astral sight, at 20 below zero, is sufficient to produce frostbite. The solution appears obvious. Supply them with a thin, light pair of inner gloves. What work goes into the development of adequate flying gloves? What materials are available? Silk? No. Are substitute materials available? What is the relative degree of thermal insulation, the flash resistance, snag resistance? Does the material perish in the presence of gas fumes, perspiration? Does it launder well? These are but a few of the considerations necessary before a material can be selected. Then the styling specifications must be laid down on the basis of the specific duties which the aircrew must perform.

The same general development work must be completed before specifications can be drawn up for helmets, life jackets, underwear and flying suits. The purpose? Simply to provide adequate protection for the personnel—accomplished scientifically through the cooperation of textile experts, physicists, physiologists and engineers, always keeping in mind the purpose of the article of clothing, aircraft design and as always the maintenance of efficiency of the personnel—surely a medical responsibility.

Oxygen equipment is provided to flying personnel so that they may be maintained in as nearly perfect efficiency as possible while operating at altitudes above which the efficiency would be otherwise impaired. The altitude at which oxygen is used varies in different countries and under different operational conditions. The basis of the use of oxygen is obviously physiologic. The amount of oxygen consumed by any particular individual varies with the degree of physical effort, the altitude, the temperature and several other factors. The development of oxygen equipment, naturally, must be directed toward meeting the physiologic requirements of the individual under all circumstances. Inspiratory resistances, expiratory resistances, relation between pressures and rates of flow, the thickness of regulator diaphragms—these among others are all physiologic considerations in the development of oxygen equipment, another aspect wherein the medical personnel must cooperate actively with the engineers, the instrument designers and the production personnel: a specific responsibility and another aspect to be written into the province of aviation medicine.

How much vibration of the navigator's table, the instrument panel, the gun mountings, may be allowed in order to prevent visual and general fatigue from developing in the personnel during long flights? How large should a gun turret be? Should it be engineered purely from an aerodynamic point of view? The turret is useless unless a man, an average young adult man, can efficiently use the guns in that turret. He must wear adequate flying clothing, he must have oxygen equipment, intercommunication equipment and he must have an even chance of getting out of the turret in a hurry in case abandonment of the aircraft is necessary. There is here, in the field of aircraft design, a specific field of endeavor opening itself to advice from medical personnel.

Decompression sickness, blackout, night vision, airsickness, glare, noise and vibration, fatigue, cold, heat, nutrition, oxygen equipment, clothing—these are but a few more of the many maintenance problems which present themselves in training, in operations, in aircraft design and even in tactics.

To appreciate that our efforts can no longer be confined to purely so-called medical aspects in the field of aviation, it is only necessary to remember again that the effectiveness of an aircraft is definitely limited by the least efficient member of its crew.

One cannot conclude any general discussion on aviation medicine without referring to the work of Lieut. Col. Harry Armstrong—not that he pioneered the field; that was done by Bert, Haldane, Flack, Bazett, Boothby, Schneider, Drinker and a host of others—but through his own researches he came to realize the extraordinary amount of work which had been conducted through the years, collected those works, analyzed the multitude of reports, confirmed or refuted many theories, toiled and wrote and after several years presented to the English speaking world the first comprehensive treatise on aviation medicine. Today his book, even in spite of the tremendous advances in knowledge which have been made since its publication, remains as a standard reference textbook and an inspiration to every medical officer in the air services not only in Canada, the United Kingdom, Australia and New Zealand but in his own country as well. Truly a monumental contribution which has

brought aviation medicine as a specialty to the attention of the medical profession in particular and in general to the world at large.

It should not be considered that medical personnel are attempting to conduct research work and investigations into engineering or production fields. It is simply that advantage is being taken of the fundamental training of selected medical and scientific persons in attempting to solve, on a cooperative basis, many of the problems which affect the health and efficiency of the air force personnel. That the medical branch must lead in many of these developments is because the problems are of a physiologic, physical and medical nature and have been, for too long, neglected by those who have perhaps not realized that maintenance of personnel is as important as selection of personnel and that these two great divisions comprise aviation medicine as it is practiced today.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS.

H. A. CARTER, Secretary.

HOLDER'S ULTRA SHORT WAVE H. F. CONDENSATOR NOT ACCEPTABLE

Manufacturer: "Holder's" H. F. Condensator Company, 315 Victoria Avenue, Windsor, Ont., Canada, and 217-218 Hammond Bldg., Detroit, Michigan.

In the literature advertising "Holder's Ultra Short Wave H. F. Condensator," it is said that the device "Generates 'FLUID' Electricity with Cellular Massage—Not Diathermy." The apparatus was presented for the Council's consideration by its originator, W. E. Holder, described in the advertising as "Medical Electrologist, Inventor, Author, Fellow International Faculty of Sciences (London, England)."

Following is the firm's description of the device: "The whole mechanical equipment is installed in a solid walnut cabinet. The top indicator panel is of high-grade bakelite. To the cover is attached a suitable handle making the outfit portable. A suitable drawer has been installed for the purpose of placing the gas-filled electrodes, ozone generating induction pad, electrode handle and other attachments. The size is 17 inches wide, 12 inches deep, 17 inches high. Weight with complete equipment is about 45 pounds. It is equipped to operate on 110 volts A. C. or D. C. current. Peak output 50,000 volts. Megacycle 100 to 28, consumption 2 Amps., 20 watts. DISROBING UNNECESSARY. Free from shock, sparks, burns, etc. or unpleasant feeling."

Three booklets were submitted by the firm; their titles are: (1) "The Common 'Cold,' 'Sinusitis'—and their aftermath—Successfully Combatted by 'Holder's' Ultra Short Wave Condensator Generating 'Fluid' Electricity with Cellular Massage," (2) "'Facts' Speak Louder Than 'Theories'—Over One Thousand International Medical and Non-Medical Practitioners Testify to the Remarkable Results Obtained by 'Holder's' Ultra Short Wave Condensator," (3) and a booklet giving directions for using the apparatus. Each of the booklets lists a long series of diseases and conditions said to be benefited by the use of the Condensator and also carries a great number of unsigned testimonials from persons who in the main seem to be "Naturopathic Physicians." These "Doctors" have apparently treated with the apparatus innumerable conditions including cataract, glaucoma, deafness, high blood pressure, old age, poliomyelitis, cirrhosis of the liver and cancer.

Among the specific claims made for the apparatus are the following taken from the advertising:

"By this current with its tremendous voltage and enormous oscillations we are able to mechanically induce the most powerful contractile response within the deepest tissues without other effect or sensation, except those inherent to such mechanical stimulation. It is an equalizer of the nervous forces and as a decongestive agent and tonic in the most chronic conditions it is unequalled.

"It hastens the elimination of waste products such as urea, carbon dioxide, etc., and causes a dialatation of the cutaneous vessels. It has powerful penetrative decongestion.

"It will remove early induration, thereby establishing circulation with restoration of function in processes which are the seat of local stasis. Removal of local inflammatory stasis by means of the pulsatory action of cellular massage so penetratingly induced in the tissues by the application of the glass gas-filled electrode is entirely physiological and clinically indicated, as it thereby obviates or at least minimizes other possible chronic sequelae.

"'Holder's' Ultra Short Wave Currents are counter-irritant, tropically tonic and institute cellular massage internally, thereby acting on all cell tissue, but such would not exercise gross muscular action. Its nutritional value is beyond all question as recording instruments verify."

No critical evidence has been presented to the Council to substantiate these statements. Since the statements are garbled, it is difficult to determine just what is meant by such terms as "institute cellular massage internally," "tropically tonic," "powerful penetrative decongestion" and "dialatation of the cutaneous vessels."

The advertising matter includes the following reference to the Council on Physical Therapy in several places: "Now while on this subject of discussing ultra short-wave diathermy it is as well after almost ten years of this controversy to quote the findings of the Council on Physical Therapy, who confirmed my statements, by the following article in the American Medical Association Journal of April 3, 1937:

"'LIMITATIONS OF SHORT WAVE DIATHERMY

"'Much of the work of the Council the past year has been confined to the consideration of So-Called short wave diathermy machines. In view of the deliberations, the Council believed it was justifiable to state, based on the present available evidence, the following conclusions:

"'1. There is no specific biologic action of high frequency currents.

"'2. There is no specific bactericidal action.

"'3. The therapeutic effect is due to the heat produced.'

"Elaborating on these three conclusions, the Council felt that the general practitioner would understand that when he buys a short wave diathermy machine he is simply purchasing an apparatus capable of producing heat only, in the light of available evidence, it has absolutely no other specific action. The Council felt that, if this point were understood by the physician in general practice, he might hesitate before purchasing an expensive apparatus because simpler mechanical means for the production of heat are available and are as efficacious in many cases.

"The short wave diathermy machine is a useful therapeutic agent, but in the light of the present day evidence its therapeutic effects is that of HEAT and HEAT ONLY.

"('The above findings are not the work of one or two men as there are no less than 52 names of scientific investigators who undertook to find out the true facts as to the claims of what they term SO-CALLED SHORT-WAVE DIATHERMY'.)"

"Having now given the findings of the American Medical Association I will revert back to the activities of my opponents in England in the operation of my clinic which was doing exceptionally well; in fact I had to employ four assistants to keep pace with the work."

The foregoing reference to the Council is misleading in that it is made to seem that the Council denounces the use of diathermy as a therapeutic agent. In its findings the Council reports that diathermy is useful in producing deep tissue heat. In its investigation of "Holder's Condensator" the Council found that, since the power of the instrument was insufficient to light a 25 watt incandescent lamp to full brilliance, it is apparent that the ability of the device to heat tissues is insufficient to meet the Council requirements. The manufacturer claims that the apparatus is therapeutically useful for purposes

other than producing heat, namely "Generates 'Fluid' Electricity" and gives "Cellular Massage." These purposes are meaningless and are unsubstantiated by any scientific evidence.

Claims are also made for the ozone produced by the apparatus. The following statements are taken from the advertising: "Ozone is considered the most effective oxidizing, germicidal, disinfecting and deodorizing agent known, and for this reason is being increasingly employed in the successful treatment of disease for disease germs cannot live in an ozonized atmosphere. . . . There is no question whatever that fluid electricity is generated by the Condensator, also ozone, which is designated as 'oxydul' when coming in contact with Oxygen. . . . Of 50,000,000 to 100,000,000 oscillations per second, of 60,000 volts at 20 watts combined with the germicidal agent of 'OXYDUL.' Combats the Cause of the 'Cold' Immediately, Instantaneously Relieves Sinus Pains, Banishes Hay Fever Without Heating or Burning, Shocks or Sparks, Is Soothing and Comforting."

The Council, in previous reports on ozone producing units (THE JOURNAL, April 27, 1940, p. 1632; May 17, 1941, p. 2268; Jan. 21, 1939, p. 239) has stated that ozone is ineffective as an oxidizer and that, regardless of where or how it is generated, ozone has little effect on bacteria except in strong concentrations which are harmful to human beings as well.

Apparently Holder advocates his device for the treatment of poliomyelitis, since several cases in which cures are claimed are reported in the advertising. Following is a statement taken from the advertising: ". . . as the disease will not respond to chemical warfare there is great prospect of it responding to Ultra Short Wave H. F. Currents in Condensation, which not only activates the whole of the body but imparts nutritional value." The 2 cases reported are presented in a rambling and incoherent manner and cannot be considered critical evidence.

In the files of the Bureau of Investigation of the American Medical Association is a report of the commission appointed by the legislature for the investigation of cancer remedies in the province of Ontario in which Holder and his Condensator are mentioned. Following is the commission's report:

Mr. Holder, who manufactures and sells an electric short wave machine, appeared before the Commission and explained the theory of his treatment, and filed a copy of a pamphlet in connection with the same. He claims to have invented and perfected this machine in England and now manufactures them in Toronto. They are said to sell at $300 each.

He advocates their use in various ailments. His treatment is what he calls the "dis-intoxication treatment." Contemporaneously with the use of the machine the patient goes on a diet consisting in a large part of distilled water, fruit juices, fruits and vegetables, as explained by him, for a period of some two months.

While he claims to have treated cases of cancer in England by this method, since coming to Canada, something over two years ago, he has not himself treated any cases.

Mr. Holder's evidence before the Commission referred particularly to the treatment of cancer by this method. In his pamphlet on treatment by his invention known as "dia-static Ultra Short Wave Condensator, with Cellular Massage" or "Holder's Mystery Ray," he cites thirty-nine different ailments successfully treated, but cancer is not mentioned.

In his publication entitled "The Hidden Menace" he elaborates on aluminum as a cause of cancer and many other ailments, but exhaustive investigations have failed to show that the use of aluminum containers and other articles made of the metal produce any injurious effects on the human body.

In the opinion of the Commission the evidence submitted would not support a finding that Mr. Holder's suggested treatment had any merit as a remedy for cancer.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, Sept. 9, 1939, carried a report of the Bureau of Investigation titled "Thermo-Magnetic Cushion Fraud—W. E. Holder's Device is Debarred from the Mails." The Thermo-Magnetic Cushion was a rubber chair cushion containing an electric unit with connections. It was represented in some of the advertising as "The Natural Method of 'Rejuvenation'" and was said to "stop the cry of those irritated nerves responsible for the pains of menstruation, of enlarged prostate, kidney and bladder troubles, lumbago, sciatica, etc." Also this "new and simple method applies deep soothing heat to the organs of the pelvis and abdomen." The Post Office Department issued a fraud order against the concern on Dec. 23, 1938 debarring from the mails the Chicago Thermo-Magnetic Cushion Company, Ruby E. Morgan, Secretary, Holder's Health Aids, Inc., W. E. Holder, President, and their officers and agents as such.

Since the power of the Holder so-called ultra short wave high frequency condensator is insufficient to light a 25 watt incandescent lamp to full brilliance, it is obvious that, in view of the studies of the Council on Physical Therapy, the ability of the device to heat tissue cannot meet the Council's requirements.

Although the manufacturer states that this unit is not a diathermy apparatus, actually it is, according to the terminology employed by the Council on Physical Therapy. It is a spark gap type of diathermy of such low output that there is a negligible amount of heating produced in the tissues. Because the Council's investigations indicate that the only proved clinical effect of short wave high frequency currents results from the heating which is produced, and because this particular high frequency apparatus produces a negligible amount of heating, no beneficial physiologic effects can be expected to be obtained from it. Evidence submitted by Mr. Holder fails to substantiate the therapeutic claims made for the appliance.

Furthermore, the literature submitted by the manufacturer in support of his claims is misleading. Recently this manufacturer, in conjunction with his promotion of the "Condensator," has promoted a method for prevention of radio interference which he claims for his own. Inspection of the literature describing his screening method of prevention of radio interference indicated that he is merely employing an ordinary screened enclosure for this purpose. This method of preventing radio interference is common knowledge among all radio engineers.

In view of the aforementioned, the Council on Physical Therapy voted not to include the Holder's Short Wave H. F. Condensator in its list of accepted devices.

TENTATIVE STANDARD PROCEDURE FOR EVALUATING THE PERCENTAGE OF USEFUL HEARING LOSS IN MEDICOLEGAL CASES

IN 1938 THE LACK OF UNIFORMITY IN ESTIMATING THE PERCENTAGE LOSS OF USEFUL HEARING AS POINTED OUT BY COURTS OF LAW, INSURANCE COMPANIES, COMPENSATION COURTS AND OTHERS CAUSED THE CONSULTANTS ON AUDIOMETERS AND HEARING AIDS OF THE COUNCIL ON PHYSICAL THERAPY TO FORMULATE A METHOD FOR THE CONSIDERATION OF OTOLOGISTS AND PHYSICIANS. THE HOUSE OF DELEGATES AT ITS ANNUAL MEETING IN 1939 APPROVED THE ACTION OF THE CONSULTANTS FOR THE STANDARDIZATION OF TESTS AND THE PREPARATION OF A METHOD FOR ESTIMATING THE PERCENTAGE LOSS OF HEARING.

THE FOLLOWING METHOD HAS BEEN PREPARED BY THE CONSULTANTS AND ADOPTED BY THE COUNCIL ON PHYSICAL THERAPY AND THE SECTION ON LARYNGOLOGY, OTOLOGY AND RHINOLOGY AT THE ANNUAL SESSION OF THE AMERICAN MEDICAL ASSOCIATION IN 1942 AND BY THE HOUSE OF DELEGATES AT ITS ANNUAL MEETING IN ATLANTIC CITY IN JUNE 1942.

THE COUNCIL ON PHYSICAL THERAPY WISHES TO EXPRESS ITS APPRECIATION FOR THE VALUABLE ASSISTANCE RENDERED IN THE PREPARATION OF THIS REPORT TO DRS. C. C. BUNCH (DECEASED), GEORGE M. COATES, EDWIN P. FOWLER, W. E. GROVE, ISAAC H. JONES, DOUGLAS MACFARLAN, C. STEWART NASH, HORACE NEWHART, PAUL E. SABINE, BURT R. SHURLY AND WILLIAM P. WHERRY, (DECEASED).

HOWARD A. CARTER, Secretary.

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1. Since the pure tone audiometer is the best available instrument for determining the loss of acuity of hearing, the procedure recommended herein is based on measurements of hearing loss with an accepted standard audiometer. Since, in the present state of knowledge, it is not possible to arrive at quantitative evaluation of hearing impairment except by audiometric measurements, no consideration is given to other than audiometric findings in setting up this basic procedure.

2. The recommended procedure is based only on threshold measurements of acuity of hearing for air conducted sound.

3. The following decibel losses, as measured by an accepted standard audiometer, represent 100 per cent loss of useful hearing:

128	256	512	1,024	2,048	4,096	cycle/sound
65	80	85	95	95	90	decibels

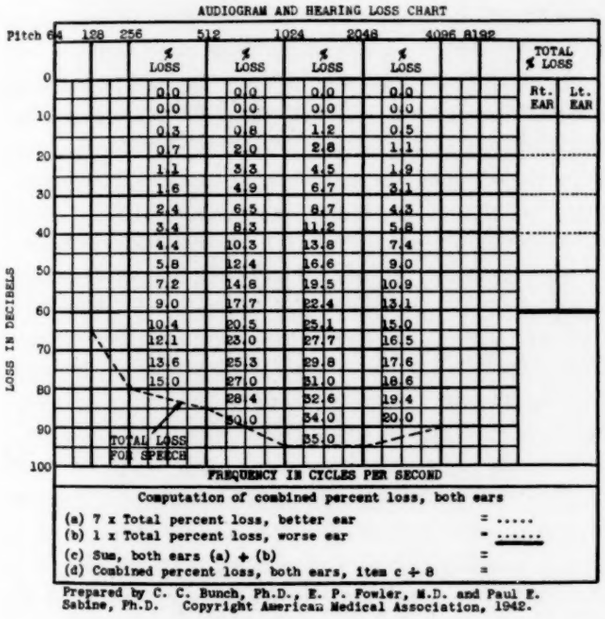
4. Percentage losses corresponding to measured decibel losses in the octave intervals are shown on the accompanying chart.

These percentages are based on existing data bearing on the relative values of the different portions of the auditory range for intelligibility of direct speech.

5. In using the accompanying chart for evaluating percentage loss of hearing, the procedure is as follows:

Measured hearing losses at the different frequencies for each ear are plotted in the usual manner. Succesive points are connected by straight ruled lines. The percentage loss to be assigned to each octave interval is the figure in the space immediately above the straight line drawn in that octave. (When two or more spaces are intersected, the average of the figures in the intersected spaces is to be taken.) The figures for the four octaves for each ear are set down in their respective columns headed Right Ear and Left Ear at the right of the chart. The sum of the figures in the column headed Right Ear is the total percentage loss of hearing for the right ear, and similarly for the left ear.

6. Computation of combined hearing loss for both ears: This computation is indicated at the bottom of the chart. The weighting of percentage loss shown by the better ear as compared with that by the worse ear of 7 to 1 represents the


AUDIOGRAM AND HEARING LOSS CHART
Pitch 64 128 256 512 1024 2048 4096 8192
% LOSS
TOTAL % LOSS
Rt. EAR
Lt. EAR
LOSS IN DECIBELS
TOTAL LOSS FOR SPEECH
FREQUENCY IN CYCLES PER SECOND
Computation of combined percent loss, both ears
(a) 7 x Total percent loss, better ear =
(b) 1 x Total percent loss, worse ear =
(c) Sum, both ears (a) + (b) =
(d) Combined percent loss, both ears, item c ÷ 8 =
Prepared by C. C. Bunch, Ph.D., E. P. Fowler, M.D. and Paul E. Sabine, Ph.D. Copyright American Medical Association, 1942.

Audiogram and hearing loss chart.

composite judgment of the committee based on both clinical experience and practical considerations. The percentage loss of hearing is the average of the losses for the two ears taken separately weighted in the ratio of 7 to 1.

7. The percentages shown on the accompanying chart were arrived at from quantitative data to be found in the following references:

Bunch, C. C.: Usable Hearing, *Ann. Otol., Rhin. & Laryng.* **49:** 359 (June) 1940.
Fletcher, Harvey: Speech and Hearing, New York, D. Van Nostrand Company, Inc., 1929, pp. 158 and 136.
Fowler, E. P.: Hearing Standards for Acceptance, Disability and Discharge in the Military Services and in Industry, *Tr. Am. Otol. Soc.*, 1941.
Knudsen, V. O.: *Physical Review* **21,** January 1923.
Sabine, P. E.: Estimating the Percentage Loss of Useful Hearing, *Tr. Am. Acad. Ophth. & Otolaryng.*, March-April 1942.
Steinberg, H. C., and Gardner, M. B.: The Auditory Significance of Hearing Loss, *J. Acous. Soc. America* **11:** 270 [No. 3] 1940.

The foregoing is recommended as a tentative standard procedure based on present knowledge of the relation between the audiometrically measured acuity of hearing and the ability to interpret direct speech in a familiar language.

This procedure is subject to revision when further authoritative data on the problem become available.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Acting Secretary.

LIVER AND STOMACH PREPARATIONS (See New and Nonofficial Remedies, 1941, p. 328).

The following product has been accepted:

THE UPJOHN COMPANY, KALAMAZOO, MICH.

Liver Liquid Extract Oral: 8 ounce bottle. A solution of the water soluble fraction extracted from mammalian liver. Each 45 cc. (1½ fluidounces) represents 1 U. S. P. oral unit.

NORMAL HUMAN SERUM AND NORMAL HUMAN PLASMA (See THE JOURNAL, Sept. 13, 1941, p. 935, and the Revised Supplement to New and Nonofficial Remedies, 1941, p. 30).

The following products have been accepted:

CUTTER LABORATORIES, BERKELEY, CALIF.

Normal Human Serum: 50 cc. and 250 cc. bottles. 1-10,000 sodium ethylmercuri-thiosalicylate is used as a preservative.

Normal Human Plasma: 50 cc. and 250 cc. bottles. 1-10,000 sodium ethylmercuri-thiosalicylate is used as a preservative.

SAMUEL DEUTSCH SERUM CENTER, MICHAEL REESE HOSPITAL, CHICAGO.

Normal Human Serum: 250 cc. bottle. Merthiolate 1-10,000 is used as a preservative.

Normal Human Serum (Diluted): 250 cc. bottle. Diluted with 250 cc. of isotonic solution of sodium chloride. Merthiolate 1-10,000 is used as a preservative.

Normal Human Plasma (Citrated): 300 cc. bottle. Merthiolate 1-10,000 is used as a preservative.

Normal Human Plasma (Citrated) (Diluted): 300 cc. bottle. Diluted with 250 cc. of isotonic solution of sodium chloride. Merthiolate 1-10,000 is used as a preservative.

TINCTURE DIGITALIS (See New and Nonofficial Remedies, 1941, p. 212).

The following dosage form has been accepted:

THE WM. S. MERRELL COMPANY, CINCINNATI.

Tincture Digitalis: 1 ounce, 4 ounce, pint and gallon bottles.

SULFANILAMIDE (See New and Nonofficial Remedies, 1941, p. 503).

The following dosage form has been accepted:

CIBA PHARMACEUTICAL PRODUCTS, INC., SUMMIT, N. J.

Tablets Sulfanilamide: 0.5 Gm.

SULFAPYRIDINE (See New and Nonofficial Remedies, 1941, p. 508).

The following dosage form has been accepted:

CIBA PHARMACEUTICAL PRODUCTS, INC., SUMMIT, N. J.

Tablets Sulfapyridine: 0.5 Gm.

PHENOBARBITAL (See New and Nonofficial Remedies, 1941, p. 142).

The following dosage forms have been accepted:

SMITH-DORSEY COMPANY, LINCOLN, NEB.

Tablets Phenobarbital: ⅛ grain, ¼ grain and ½ grain.

EPHEDRINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1941, p. 245).

The following dosage form has been accepted:

GEORGE A. BREON & COMPANY, INC., KANSAS CITY, MO.

Solution Ephedrine Hydrochloride 3%: 1 ounce and 1 pint bottles. 0.5 per cent chlorobutanol added as preservative.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, AUGUST 1, 1942

JAUNDICE FOLLOWING YELLOW FEVER VACCINATION

At his press conference in Washington on July 24, Secretary of War Henry L. Stimson reported that 28,585 cases of jaundice had developed among army personnel between January 1 and July 4 apparently from the use of vaccination against yellow fever. Of those affected, 24,057 were among troops in the United States and 4,528 among personnel abroad. The ratio of deaths was 1 for every 461 cases, or a total of 62 deaths in all. The information supplied did not state what proportion of those injected failed to develop jaundice. A report in the Washington, D. C., *Post* states that "in one camp 700 cases developed out of 15,000 men who were given the vaccine." Actually between two and two and a half millions of men have been inoculated.[1] The peak of incidence was in the week ended June 20, when 2,997 cases were reported in hospitals, whereas the week ended July 4 showed only 2,575 cases. In the meantime, as pointed out by Surg. Gen. James C. Magee, the form of the vaccine against yellow fever has been modified; the Surgeon General is confident that this change will eliminate the difficulty. Inquiry at the Office of the Surgeon General of the United States Navy indicated that the proportion of cases in the Navy was not as high as in the Army. Indeed so few as to be negligible.

In THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION for July 18 an official release from the public relations bureau of the United States Army stated that there had been numerous admissions to Army hospitals on account of jaundice which had the characteristics of catarrhal jaundice but that the total number of cases in the entire army had not been enough to increase appreciably the admission rate for all diseases. Assurance was given further that the condition concerned was not yellow fever and should not be considered dangerous to the general public. In this connection physicians should be aware that the vaccination against yellow fever utilizes a living virus which has been made innocuous by the usual technics and which has the virtue, scientifically established, of building a defense against yellow fever.

The charge has been made by the Chicago *Tribune* that the medical department of the United States Army and thereby our government has been "guilty of a grievous error of judgment." The *Tribune* asks "How did it happen that wholesale vaccinations were undertaken with a vaccine which quite obviously had not been thoroughly tested in advance?" The statement in the Chicago *Tribune* is unwarranted. Testing had been adequate. The vaccine had been tested in hundreds of thousands of cases. The procedure is, however, a new one and, as with all procedures in the field of medicine, the use of any new technic in the field may yield information which is quite different from that obtainable on preliminary testing. There is every reason to believe that vaccination against yellow fever is warranted and that the occurrence of 62 deaths and some 28,000 cases of jaundice associated with the vaccination of millions of men is far less serious than would be an epidemic of virulent yellow fever among soldiers sent to the tropical areas in which our army is now engaging the enemy.

In its editorial statement the Chicago *Tribune* says that "an inquiry is plainly indicated." That statement presupposes a stupidity on the part of medical science which is wholly unjustified. From the very moment when cases of jaundice first appeared in association with inoculation against yellow fever, the best medical talent available in the United States was concentrated on this question. In its study of epidemic and other diseases, the Army Medical Department does not depend exclusively on its peacetime personnel. It has engaged the facilities and the talent assembled by the Division of Medical Sciences of the National Research Council, and it has established a consulting staff of physicians from civil life which represents the very best that this nation can supply.

The American Army has always been the most healthy army in the world. Its sickness and death rates today are, even with the temporary invalidism associated with the vaccination, far less than those of similar age groups in civilian life. This fact warranted the statement published in THE JOURNAL on July 18 that "the total number of cases in the entire army has not been enough to appreciably increase the admission rate for all diseases." By the type of editorial that has been printed, the Chicago *Tribune* has done a disservice to American medicine. Certainly by the fears it may create among soldiers now being inducted into our armed forces it will injure morale and make more difficult the task of assembling the type of force that must be assembled to meet the challenge of our enemies. The haste with which the editorial must have been prepared certainly made impossible the kind of scientific investigation on which charges such as the *Tribune* has made ought to be based.

1. See Yellow Fever Vaccination, p. 1114.

CURRENT NEEDS FOR MEDICAL AND HEALTH PERSONNEL

In an effort to determine just how large a medical personnel may be required in health departments and hospitals, G. St. J. Perrot and Harold F. Dorn [1] of the Division of Public Health Methods, National Institute of Health, sent out a questionnaire to all such institutions. About 80 per cent, or 1,036 of the 1,272 health departments to which questionnaires were sent, reported that they now employ 16,921 technically trained full time paid persons and have existing vacancies for 1,093 persons. Needed to provide services made necessary by wartime activities is an additional 3,908 persons. If the 20 per cent of health departments which did not reply need proportionately as many persons, an estimated total of slightly more than 6,000 employees will be required by health departments. Forty per cent of these are public health nurses and 9 per cent physicians.

Private and nonfederal governmental hospitals reported that at present nearly 20,000 nonmedical professional and technical persons are needed and that planned expansion will require as many more. Forty-five per cent of these are graduate nurses and 21 per cent student nurses. "Many hospitals report that the difficulty of obtaining interns, residents and service and maintenance personnel is fully as great as the difficulty of obtaining technically trained persons. This shortage of personnel is partially the result of an increased demand for hospital service arising from the higher income of wage workers and, in certain areas, from a rapid increase in population because of the expansion of war industries. Equally important, however, is the loss of personnel, some of whom have been taken by the armed forces or governmental and military agencies needing trained persons, while others have left because higher wages and shorter hours could be obtained from employment in various war industries."

The report concludes that "the needs for personnel shown in the tables will increase as the armed forces expand, and as more and more persons are required for the expansion of war industries. With the exception of physicians, dentists and nurses, the armed forces are now training an appreciable proportion of their own requirements for technical health personnel. However, men of military age will continue to be taken for military service unless present policies are changed."

Probably no other problem of the war is as difficult from the sociologic, economic and other points of view as the problem of personnel. The training of great numbers of persons in excess of peacetime requirements may mean considerable unemployment after the war. Speeded education is likely to be incomplete and likely to result also in the appearance of many unqualified practitioners in all the professional fields when the emergency ends. Nevertheless the needs, as far as concerns the protection of the public health and the provision of medical care for persons in mushroom towns and boom town areas, must be met. The problem is definitely one for the medical and public health professions. The Procurement and Assignment Service for Physicians, Dentists and Veterinarians should be able, with the complete cooperation of the medical profession, to take care of the medical aspects. During the period of the war physicians must be willing to dislocate themselves in order to meet these war needs exactly as they must be willing to volunteer for service with the armed forces as those forces require additional enlistments. If the medical profession can answer these calls as they should, the problem of postwar adjustment, with the retention of all the factors that make American medicine what it is today, is more likely to be solved suitably.

1. Perrot, G. St. J., and Dorn, H. F.: Pub. Health Rep. **57**: 997 (July 3) 1942.

SIGNIFICANCE OF THE LABILE METHYL GROUP

One of the more recent contributions of research is the elucidation of the part played in the mammalian organism by the "labile methyl" group, a chemical radical which is labile in the sense that it can, if need be, be transferred in vivo from one organic substance to another. This simple grouping has been found to be involved in lipid and in carbohydrate, as well as in protein, metabolism. Labile methyl is indispensable to the animal body and must be provided in the diet. Fortunately, the radical is found in a number of substances, including the amino acid methionine.

Much of our knowledge concerning the essential transferable methyl group has been gained from studies on the production and prevention of fatty livers. Thus it has been found that the accumulation of excess fat in the liver which occurs under particular experimental conditions may be counteracted more or less effectively by choline and by betaine, as well as by methionine or by protein containing this amino acid.[1] Study of the chemical makeup of these lipotropic substances reveals that they all possess one chemical group in common, namely the methyl group. Not all materials which contain this chemical grouping are, however, lipotropic. The methyl group to be effective must be capable of participation in transmethylation reactions. Ingenious experiments in which deuterium was used as an identifying element have revealed that the methyl group of methionine may be used by the rat for the synthesis of both choline and creatine.[2] Similarly, choline has been found to make possible the methylation of homocystine to methionine in the animal body.[3] A dietary deficiency of choline and of other sources of labile methyl produces in young rats a pathologic state char-

1. Treadwell, C. R.; Groothuis, Marjorie, and Eckstein, H. C.: J. Biol. Chem. **142**: 653 (Feb.) 1942. Griffith and Mulford.[4]
2. du Vigneaud, Vincent; Chandler, J. P.; Cohn, Mildred, and Brown, G. B.: J. Biol. Chem. **134**: 787 (July) 1940.
3. du Vigneaud, Vincent; Chandler, J. P.; Moyer, A. W., and Keppel, Dorothy M.: J. Biol. Chem. **131**: 57 (Nov.) 1939.

acterized by hemorrhagic degeneration of the kidneys. This condition may be prevented by choline, methionine or betaine.[4] The transferable methyl radical is also of importance in detoxication mechanisms in the organism. For example, the intoxication and the inhibition of growth effected by the administration of pyridine to rats may be counteracted by the inclusion of methionine or of choline and homocystine in the diets of the animals.[5] In the course of its detoxication, pyridine is apparently methylated to form methyl pyridinium hydroxide.

Recent research activity has already enhanced our estimate of the significance in nutrition of substances, such as choline and methionine, which bear a labile methyl radical. Further developments relating to the problem of the transferable methyl group will be awaited with interest.

Current Comment

"SHAM RAGE" IN MAN

The term "sham rage" has been suggested by Cannon and Britton [1] to describe spontaneous outbursts of motor activity in cats resembling fear and rage, resulting whenever the cortex of a cat is disconnected from the lower centers and the animal is allowed to emerge from anesthesia. This reaction, therefore, occurs in the absence of cortical and, presumably, in the absence of psychic elements. This and other evidence leaves little doubt that the integration of the processes concerned in the emotional expressions of rage and fear occurs centrally in the hypothalamus. However, the evidence available does not decide whether direct stimulation of the hypothalamus or allowing the hypothalamus to act in uninhibited fashion gives rise to the actual experience of fear, rage or any other affect as such in the human being. Now Wortis and Maurer [2] present 2 cases of "sham rage" in human beings, one following insulin hypoglycemia, the other following carbon monoxide poisoning. In neither case was the rage purposeful and at no time did the patients attempt to untie their restraints, strike the examiners or escape painful stimuli. In both cases there was apparent involvement of the higher centers, and the "sham rage," these workers believe, is the result of uninhibited hypothalamic discharge. They conclude also that the expression of emotion does not necessarily mean that the individual is experiencing emotion. There seems no reason, however, to accept the idea that the hypothalamus is the "emotional center" of the body. Affects and emotions are highly complicated psychosomatic processes which require, among other things, a functioning cerebral cortex.

4. Griffith, W. H., and Mulford, D. J.: J. Nutrition **21**: 633 (June) 1941.
5. Stekol, J. A., and Conway, W. J.: Abstr. Atlantic City Meeting of American Chemical Society, Division of Biological Chemistry, September 1941, p. 13.
1. Cannon, W. B., and Britton, S. W.: Studies on the Conditions of Activity in Endocrine Glands, Am. J. Physiol. **72**: 283 (April) 1925.
2. Wortis, Herman, and Maurer, W. S.: "Sham Rage" in Man, Am. J. Psychiat. **98**: 638 (March) 1942.

MEDICAL CARE IN CONNECTICUT

The medical society of the state of Connecticut has recently issued a booklet entitled "This Is Medical Care in Connecticut." [1] This planographed pamphlet of forty-eight pages sets forth in pictures and brief notations the story of medical care in Connecticut. Such subjects as safer childbirth, supervision of well babies, hospital care, modern diagnostic methods, control of milk borne epidemics, recreation, reeducation of the mentally ill, measures against cancer, prophylaxis against infection of minor wounds, pneumonia, industrial health and accident hazards, transfusion, blood banks and plasma, antepartum service including fathers' classes, and health of the individual over 50 comprise its content. The theme of the book, on page 1, is shown by a picture of a physician making a home call and the legend "Your Doctor Makes Connecticut a Healthy State." On the last page are the dates 1792 and 1942 and the statement "For one hundred and fifty years the physicians of the Connecticut State Medical Society have protected the health of the people of Connecticut." With its cover in full color bearing the state flag of Connecticut and the seal of the state medical society, its attractive pictorial handling with a minimum of text, and a map showing the distribution of hospitals in Connecticut, this booklet should enlighten Connecticut people as to what their doctors have done for them. Such interpretation of medical care by those who give it for those who receive it helps to promote understanding between doctor and patient.

CONSERVATION OF DRUGS AND MEDICAL SUPPLIES

Elsewhere in this issue appears a statement developed by the Subcommittee on Hospital and Medical Supplies and by the Committee on Drugs and Medical Supplies of the Division of Medical Sciences of the National Research Council relative to the conservation of important materials used in medical practice. Eventually a shortage may occur, because the supply of basic materials is beginning to be restricted. Obviously the supply of all materials depending on steel, aluminum, nickel, rubber, alcohol, glycerin, quinine, zinc or other similarly important elements is likely to be restricted, because these are the materials that find such specific purposes in the production of the instruments of warfare. There are innumerable ways in which the staffs of hospitals and physicians in their offices may conserve such materials—most important, however, being the avoidance of wastage. Far too often doctors and nurses are careless in their use of adhesive tape, withdrawing from spools more material than is actually going to be needed. Alcohol may be wasted by pouring away used materials that can be easily reclaimed. Rubber gloves with the proper attention will outlast by double the time of their usual life. The American Hospital Association and staffs of various institutions should aid in this campaign in every way possible. Posters may be prepared by such organizations and by manufacturers of such products which, distributed and posted throughout the hospital, will serve as a constant reminder to the users of the necessity for careful conservation.

1. This Is Medical Care in Connecticut, New Haven, Connecticut, State Medical Society, copyright 1942.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession.

CONSERVATION OF MEDICAL SUPPLIES

The medical profession and hospitals of the country must practice the most severe economy possible in the use of supplies containing materials essential to the conduct of the war. Rubber, metals, fixed equipment, chemicals and drugs must be conserved to the utmost to make the supply last for the duration of the war. Rubber gloves, when torn, should be patched; rubber drainage material should be resterilized and used again. Adhesive plaster contains rubber. Two pieces should not be used when one will suffice. Better yet, none at all should be used if a cotton bandage will be an adequate substitute. Unnecessarily large dressings should be avoided. Catgut must be conserved. Alcohol and other chemicals should be used as sparingly as possible.

It is expected that hospital supplies will be available in sufficient amount to meet the needs of civilian patients, but only if those needs are reduced to a minimum. Enormous quantities must be supplied to the military hospitals and to our allies, despite the fact that the materials from which most of the articles are made are in demand for other purposes. Waste, however slight, must be scrupulously avoided.

This program has the endorsement of the Health Supplies Branch of the War Production Board.

Committee on Drugs and Medical Supplies

W. W. Palmer, Chairman; Perrin H. Long, Vice Chairman; Morris Fishbein, Evarts A. Graham (ex officio), Ernest E. Irons, E. F. Kelly, George W. Merck, O. H. Perry Pepper (ex officio), John G. Searle.

Subcommittee on Hospital and Surgical Supplies

Evarts A. Graham, Chairman; C. W. Munger, Mont R. Reid, Edward J. Sovatkin, G. W. Wallerich.

PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

QUESTIONS FREQUENTLY ASKED WITH ANSWERS OFFICIALLY RELEASED BY THE BOARD

FRANK H. LAHEY, CHAIRMAN

GRADUATES OF FOREIGN MEDICAL SCHOOLS

1. Q. What can a graduate of a foreign medical school (aged 33, citizen) do to obtain a commission in some branch of the defense effort? What can he do to avoid being drafted as a private?

A. If such a man is willing to be dislocated for war effort, his best opportunity would be in industrial medicine and surgery or in some of the areas in which the department of public health is seeking to locate physicians. He might be able to obtain a commission with the Army if he complies with the recently formulated conditions for class B medical school graduates.

MEN OVER 45—OVER 60

2. Q. What is the program for men of 60 years of age? For those between 45 and 60?

A. Men over 60 will be best utilized to take up the additional local load caused by the departure of younger men. Those between 45 and 60 would serve in this same fashion except in instances of specialists whose training makes them particularly desirable for the Army and who can obtain commissions granted for these special purposes.

OFFICE LEASES AND OTHER OBLIGATIONS

3. Q. What happens to office leases? Payments on instalment purchases? H. O. L. C. obligations?

A. The Soldiers' and Sailors' Civil Relief Act has been enacted by Congress to free persons in military service from harassment and injury to their civil rights during their terms of service and thus to enable them to devote their entire energy to the defense needs of the nation. The present law, however, does not apply to office leases; it applies to leases of property used for household purposes. Pending legislation does provide a method by which office leases may be canceled. Protection is afforded in the case of instalment contracts, mortgages, insurance premiums, taxes and the like. The law does not relieve you from liability but prevents the enforcement, to your detriment, of the terms of your agreement while you are in service. A detailed outline of the present law was published in THE JOURNAL, Jan. 24, 1942, page 306. The pending legislation, which has already passed the House of Representatives, will further safeguard the civil rights of persons in military service.

SELECTED APPOINTMENTS

4. Q. Can one select service under a certain doctor?

A. No, but one may ask for service in a certain outfit and will have to run his chances of getting it.

CALLED BY SELECTIVE SERVICE

5. Q. What happens if a man has given his name to "Procurement and Assignment" and his name is drawn by the draft but he has not been called by Procurement and Assignment?

A. This man should appeal to his state Procurement and Assignment chairman to intervene on his behalf.

ENROLMENT AND ENLISTMENT

6. Q. Is the word "enrolment" interpreted as an "enlistment" in the terms of the act?

A. No.

PLACES FOR SPECIALISTS

7. Q. For this emergency you speak of, there are many of us between 37 and 45 who are willing to go at once if needed

but are not certified with any board as specialists but are nevertheless capable. Should we then wait for the Procurement and Assignment service to place us?

A. Procurement and Assignment cannot place men. Such men should request commissions, giving their professional qualifications, and they may ask that the state chairman of Procurement and Assignment write a confirmatory letter for them.

INTERNSHIPS OF TWO YEARS

8. Q. What is attitude toward the intern in hospitals where two years' internship is regular appointment?

A. Deferment for one year's internship is all that is allowed at the present time.

RESIDENTS

9. Q. What will be the disposition of residents in teaching hospitals connected with medical schools?

A. Procurement and Assignment is making efforts to preserve enough residents in teaching hospitals to carry on the hospital service and to assure a continuing supply of specialists.

ESSENTIAL TEACHERS

10. Q. I want to get into active military service, but my medical school where I am teaching says that I am necessary for that school. What shall I do? Will I be looked on as a shirker if I stay at home when my associates go and risk their lives?

A. This man should stay home unless he can provide his medical school with some one capable of taking his place and thus be released as available.

ASSISTANT TO A SURGEON

11. Q. In what way does the Procurement Board evaluate one who has been assistant to a surgeon for eight years in his total practice?

A. The Procurement Board would consider such a man suitable for service with a station hospital as assistant surgeon or ward surgeon.

ESSENTIAL ON HOSPITAL STAFF

12. Q. On what basis do you call a man essential at a hospital? What yardstick do you use to call men essential to the hospital staff? What should the man who is 48 years of age and is on the essential list of a hospital do as to volunteering to the government service?

A. Each hospital is supposed to make its own list of essential men, which is submitted to the state chairman of Procurement and Assignment. If he agrees, they are considered essential; if he does not, the hospital will be required to modify its list. Men on the essential list over 45 years of age should not volunteer except for highly special service.

PHYSICAL QUALIFICATIONS OF MEDICAL STUDENTS

13. Q. Should students who are not physically up to the army and navy standards be admitted to medical schools?

A. Yes. Failure to meet physical standards should not exclude promising young persons from medical education. Furthermore, this type of student may be highly important in the next few years to carry on hospital and teaching work.

OBSTETRICIANS

14. Q. What should men doing obstetrics do?

A. Men doing obstetrics should conform to the general requirements of their age group laid down for the rest of the profession.

FAILURE OF PHYSICIANS TO APPLY FOR COMMISSION

15. Q. If a doctor has been notified through Procurement and Assignment service that he had been selected and to apply for a commission, is it compulsory that he apply immediately? What if I don't answer questionnaire and enrolment blanks?

A. It is not compulsory. Certainly it is expected that physicians will cooperate; if they fail to do so, they are not doing what they should to aid our nation in meeting our great emergency.

LIMITED SERVICE

16. Q.—Do you wish applicants who have physical defects but could work under limited strain?

A. Yes, if they can meet the requirements for limited service.

SPECIALTY SERVICES

17. Q. I had intended going into a specialty this summer and have been taking postgraduate work in that direction with the intention of taking a residency in that specialty this summer. Is there any way in which I can possibly get into that specialty through the armed forces—such as taking courses or a residency in one of the government hospitals?

A. If a man is commissioned in the Medical Corps of the Army he may request assignment to positions where he could pursue a specialty, but there is no obligation, of course, on the Medical Corps to meet his request.

WAIVERS OF PHYSICAL DEFECTS

18. Q. If I have a physical defect and sign a statement to that effect in applying for a commission in the Army, do I thereby waive any benefits to which I might be justly entitled?

A. No. The statement or affidavit does not constitute a waiver of any benefits. It is merely an acknowledgment of the existence of a physical disability which would, unless waived by the Army, preclude the granting of a commission to you. The statement you sign forms a basis of action by the Adjutant General's Office looking toward the waiver of your disability so that you may be accepted for military service.

REASSIGNMENT OF MEDICAL OFFICERS IN ADMINISTRATIVE POSITIONS

Several hundred Medical Corps officers, currently engaged in such administrative posts as adjutants, inspectors and mess officers, will be reassigned "to posts in which their professional medical training can be utilized to the fullest extent," Mr. Stimson said in a recent interview. Medical Administrative Corps officers will replace the reassigned doctors. The new move, he stated, "is part of a comprehensive plan by which the Army seeks to fill the need for about twenty thousand additional doctors by the end of 1942" and "supplements a previously announced recruiting program throughout the nation by which most of the doctors are to be obtained."

YELLOW FEVER VACCINATION

A review of the work of the Rockefeller Foundation for 1941 by the president, Raymond B. Fosdick, states that in 1936 the laboratories of the International Health Division of the foundation developed a vaccine which provides active immunity against yellow fever after a single injection. As a result of the war emergency the demand for this vaccine has been so great that, in order to produce it in the quantities required, the foundation has had to double both its laboratory space and the number of its technicians.

The distribution of yellow fever vaccine manufactured by the foundation in New York in 1941 was as follows:

	Number of Doses	
United States Army	959,300	
United States Navy	960,000	
United States Public Health Service	3,000	
Panama Canal Zone	4,000	
Virgin Islands	12,000	
Total for United States government		1,938,300
West Africa	152,000	
South Africa	158,000	
East Africa	1,662,380	
Total for Africa		1,972,380
India		222,000
Brazil		100,000
Singapore		28,000
Grand total		4,260,680

In addition to these amounts the United States Army and Navy have asked the foundation to supply them with several million doses more during 1942. In all cases, both here and abroad, the vaccine is, of course, furnished without charge.

SELECTIVE SERVICE REGISTRANTS IN TENNESSEE QUALIFIED FOR LIMITED MILITARY SERVICE

With Attention to Remediable Defects

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Early in the operation of Selective Service in Tennessee it was realized that the information regarding physical findings of the examined registrants would be of value for a study of the nature and extent of the health and medical problems in Tennessee and for administrative purposes in the conduct of the program. Accordingly, a procedure was developed for the analysis of each registrant's report of physical examination (Selective Service Form 200), which was completed by the local Selective Service boards during the period from Feb. 15, 1941 to Jan. 1, 1942. The study included also a further analysis of causes of rejections of those registrants who were sent to the Army induction stations during this period.

The purposes of the present report are twofold, namely (1) to show the nature of defects found on examination with the frequency of occurrence of these defects and (2) to present a reasonable estimate of the number of registrants qualified for limited military service who may be qualified for general military service by institution of corrective medical, surgical or dental procedures for rehabilitation.

All diseases and conditions have been coded under a detailed diagnosis code of three hundred and one title numbers for diseases and conditions. Personnel already carefully trained in coding physical defects were used to code all defects found on the report of physical examination. All coding was checked by a second coder to insure accuracy. The coded data were then transferred to especially prepared punch cards, from which tabulations were prepared.

In the tabulations for this report all diseases and conditions were divided into two groups, namely (1) diseases and conditions which may be remediable and (2) diseases and conditions which probably are not remediable. In general, the so-called remediable defects are those which can probably be corrected for a high percentage of the registrants and the registrants made available for military service. The list of remediable defects conforms in important and practical aspects to those defects considered remediable by Standards of Physical Examinations during Mobilization (MR 1-9, March 15, 1942).

The data included in the report were obtained from the physical examinations made under the jurisdiction of one hundred and thirty-three local Selective Service boards located in the ninety-five counties of Tennessee and from examinations of Tennessee selectees at Fort Oglethorpe, Georgia, and Camp Forrest, Tennessee, Army induction stations. These local board examinations were made by six hundred and twenty-five civilian physicians of whom the majority were general practitioners and by specialists of varying interests both as local board examiners and as medical advisory board members. This report includes a relatively small number of selectees (375) whose defects were first determined by army physicians without the men having been examined completely by the local board examiners.

The registrants have been classified in three groups: I-A, qualified for general military service; I-B qualified for limited military service, and IV-F, disqualified for military service.

A large proportion of the registrants classed I-A have been sent to induction stations, and if no disqualifying defects were discovered they have been inducted into the Army. Since the program was modified during the year to exclude registrants 28 years and over, some of the men 28 years and over classed I-A by local boards were not sent to induction stations during the period of this study, and thus it is not known whether or not they would have been rejected.

TABLE 1.—*Classification of 47,880 Registrants by Local Boards and Induction Stations, by Color*

Color	Total	Classification					
		I-A Qualified for General Military Service		I-B Qualified for Limited Military Service		IV-F Disqualified for Military Service	
		Number	Per Cent	Number	Per Cent	Number	Per Cent
Total	47,880*	25,184*	52.6	11,869*	24.8	10,827*	22.6
White	36,795	20,196	54.9	7,798	21.2	8,801	23.9
Colored	11,075	4,984	45.0	4,069	36.7	2,022	18.3

* Total includes 10 registrants of unknown color, of whom 4 were accepted for general military service and 2 for limited military service and 4 were disqualified.

During the period physical examination forms were received for 4,650 registrants (2,956 white and 1,694 colored registrants) classed IV-F, rejected for military service because of lack of educational qualifications. Since 3,734 of these registrants were not given a physical examination, they have not been included in this analysis. As these forms were requested for only part of the period, this cannot be said to be the entire group of registrants who lacked the required educational qualifications.

In considering the rehabilitation of registrants through correction of physical defects, probably these men who were rejected because of the lack of educational qualifications should also be considered as possible manpower for the Army. Since the physical examinations of these selectees have not been completed, the number who are otherwise acceptable for military service is not known. Through educational courses many of these men may gain sufficient knowledge of elementary school work to carry through their work in the Army satisfactorily. Nearly all of these regis-

From Tennessee Selective Service Headquarters and Tennessee Department of Public Health. Acknowledgement is made to Brig. Gen. T. A. Frazier, State Director of Selective Service, for his interest and cooperation.

trants may have had either no opportunity or a very limited opportunity to attend school.

The classifications by local boards and induction stations of the 47,770 registrants included in this analysis are shown in table 1. Slightly over half (52.6 per cent) of these registrants were considered qualified for general military service. Of the 22,696 registrants not qualified for general military service, 20,497 were rejected by local boards and 2,199 by induction stations.

The defects found on the examination of these registrants have been studied and are shown in table 2. Some of the registrants had outstanding disqualifying defects, for instance, patients in tuberculosis hospitals or mental institutions, so that they were not examined for other conditions. Since the prevalence of diseases and conditions other than the disqualifying conditions among these men was not known, these registrants are included only in the total number examined for the disqualifying defect or condition in the study of prevalence of these conditions. Also some of the registrants rejected had more than one defect and all defects are considered in this table.

The most common defect or disease observed in the group of registrants examined was syphilis, which was found in 3,555 (8.3 per cent) of those examined. In the group of registrants examined for syphilis 3,502, or 8.1 per cent, were found to have syphilis other than cerebrospinal, cardiovascular or visceral syphilis and for this reason were classified as I-B. An additional 53, or 0.1 per cent, were found to have the disease in the form of cerebrospinal, cardiovascular or visceral syphilis and for these reasons were classified as IV-F. Syphilis was found to be nearly ten times as prevalent among colored as among white registrants. The second most common among these diseases or conditions was musculoskeletal defects, with 3,234 (7.4 per cent) of the men examined for these defects classed as I-B or IV-F. Other very prevalent causes of rejection were dental defects, eye defects and defects of the cardiovascular system.

Since according to the physical standards of the Selective Service regulations the registrants classed IV-F are considered to have "deviations from normal function or structure causing unconditional rejection for any military service," the defects of these registrants are not considered in the following discussion of rehabilitation. However, the registrants with diseases or conditions causing them to be classed I-B (qualified for limited military service) can be considered as men who might be available for service after corrections have been made.

It was pointed out earlier in this report that many general practitioners and specialists cooperated in the examination of registrants. This must be kept clearly in mind in the following discussion, since the remediability of a defect in a given registrant depends on the findings and opinion of the examiner. Thus it can be seen that not necessarily all defects classed here as remediable would be so classified if the determinations were made solely on that basis by an army examining team. Allowing for these discrepancies, it is felt that with a fair degree of accuracy a rough estimate of the number of men who may be made available for military service can be obtained.

In discussing availability for general military service of registrants qualified for limited military service, the length of time for treatment should be considered. With present methods of treatment with the sulfonamides, men with gonorrhea may be reclassified for army service within six weeks or less after discovery, while for those with syphilis the course of treatment is considerably longer. In Tennessee the treatment of gonorrhea and syphilis for those registrants unable to pay private physicians is being carried on by the health departments in counties with full time health service.

In the group of registrants being studied 11,869 were classed I-B (qualified for limited military service), as shown in table 1. Since these registrants may have one or more diseases or conditions causing classification I-B, the possibility of remediability is considered according to the number of defects severe enough for this classification. Of these 11,869 registrants, 9,443 (79.6 per cent) were found to have only one defect, 2,122

TABLE 2.—*Results of Examinations of Each System and for Certain Diseases by Local Boards and Induction Stations, with Classification of Defect as Disqualifying or for Limited Service, by Color*

System or Disease	Total *					White					Colored				
	Total Examined	I-B Limited Service		IV-F Disqualified		Total Examined	I-B Limited Service		IV-F Disqualified		Total Examined	I-B Limited Service		IV-F Disqualified	
		Number	Per Cent	Number	Per Cent		Number	Per Cent	Number	Per Cent		Number	Per Cent	Number	Per Cent
Eyes	43,205	2,004	4.6	585	1.4	33,036	1,689	5.1	489	1.5	10,159	314	3.1	96	0.9
Ears, nose and throat	43,113	414	1.0	867	2.0	32,978	368	1.1	798	2.4	10,125	46	0.5	69	0.7
Mouth	43,037	713	1.7	464	1.1	32,915	545	1.7	379	1.2	10,112	168	1.7	85	0.8
Teeth	43,135	2,329	5.4	697	1.6	32,988	1,850	5.6	527	1.6	10,137	479	4.7	170	1.7
Skin	42,884	154	0.4	96	0.2	32,788	132	0.4	81	0.2	10,086	22	0.2	15	0.1
Varicose veins	42,868	258	0.6	151	0.4	32,772	207	0.6	119	0.4	10,086	51	0.5	32	0.3
Hernia	42,887	1,705	4.0	145	0.3	32,784	1,215	3.7	100	0.3	10,093	490	4.9	45	0.4
Hemorrhoids	42,846	108	0.3	28	0.1	32,753	81	0.2	18	0.1	10,083	27	0.3	10	0.1
Genitourinary	42,889	532	1.2	325	0.8	32,784	420	1.3	251	0.8	10,095	112	1.1	74	0.7
Feet	42,913	621	1.4	407	0.9	32,806	509	1.6	317	1.0	10,097	112	1.1	90	0.9
Musculoskeletal	43,938	1,036	2.4	2,198	5.0	33,672	878	2.6	1,832	5.4	10,256	158	1.5	363	3.5
Abdominal viscera	42,869	129	0.3	190	0.4	32,772	109	0.3	156	0.5	10,087	20	0.2	34	0.3
Cardiovascular	42,920	347	0.8	1,888	4.4	32,817	260	0.8	1,441	4.4	10,093	87	0.9	447	4.4
Tuberculosis	43,067	27	0.1	646	1.5	32,925	24	0.1	514	1.6	10,132	3	†	132	1.3
Lungs, other diseases	42,871	211	0.5	249	0.6	32,773	175	0.5	189	0 6	10,088	36	0.4	60	0 6
Nervous system	43,606	181	0.4	1,851	4.2	33,435	155	0.5	1,627	0.5	10,161	26	0.3	223	2.2
Endocrine disturbances	42,874	123	0.3	312	0.7	32,778	100	0.3	268	0.8	10,086	23	0.2	44	0.4
Syphilis	43,034	3,502	8.1	53	0.1	32,888	861	2.6	30	0.1	10,136	2,640	26 0	23	0.2
Gonorrhea	42,870	1,062	2.5	29	0.1	32,762	236	0.7	15	†	10,098	826	8.2	14	0.1
Height	43,204	1	†	77	0.2	33,032	...	...	59	0.2	10,162	1	†	18	0.2
Weight	42,950	1,023	2.4	434	1.0	32,842	937	2.9	392	1.2	10,098	86	0.9	42	0.4
General diseases	43,204	125	0.3	259	0.6	33,032	106	0.3	209	0.6	10,162	19	0.2	50	0.5
Illiteracy	43,204	...	...	916	2.1	33,032	...	...	679	2.1	10,162	...	...	237	2.3

* Totals include 10 of unknown color. † Less than 0.05 per cent.

(17.9 per cent) two defects and 304 (2.6 per cent) three or more defects causing classification I-B. These data are given in detail by color in table 3.

The defects of the 9,443 registrants with one defect causing classification I-B have been divided into two

TABLE 3.—*Number of Defects Causing Rejection Among Registrants Qualified for Limited Military Service, by Color*

Number of Defects Causing Rejection of Registrants	Total		White		Colored	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Total registrants	11,869*	100	7,798	100	4,069	100
One defect	9,443*	79.6	6,197	79.5	3,244	79.7
Two defects	2,122	17.9	1,416	18.2	706	17.4
Three defects	266	2.2	162	2.1	104	2.6
Four defects	36	0.3	22	0.3	14	0.3
Five defects	1	†	1	†	..	...
Six defects	1	†	..	...	1	†

* Total includes 2 men of unknown color.
† Less than 0.05 per cent.

groups, remediable and nonremediable. The nature of the remediable defects of this group are shown in table 4. In all, 6,476 (68.6 per cent) were considered to have remediable defects, as defined earlier in the report. Primary, secondary and latent syphilis was the one defect found for 2,211 (23.4 per cent) of these men with one defect. The percentage of these men with primary, secondary or latent syphilis was much higher for the colored (52.5 per cent) than for the white men (8.2 per cent). The second, third and fourth most common among the defects classed remediable were defective and deficient teeth, hernia and gonorrhea.

In considering rehabilitation of registrants with two or more defects causing classification I-B, it was necessary to select only men with all defects remediable. For this reason the number of men with two or more defects with these defects remediable was proportionately smaller than the proportion among men with one defect. In table 5 are given the number of white registrants with two or more defects, the number of these registrants with all defects remediable and the nature

TABLE 4.—*Nature of Remediable Defects Among 9,443 Registrants Qualified for Limited Military Service Because of One Defect, by Color*

Nature of Remediable Defects	Total	White	Colored
Total registrants	9,443*	6,197	3,244
Total with remediable defects	6,476*	3,609	2,866
Primary, secondary and latent syphilis	2,211*	507	1,703
Defective and deficient teeth	1,301	1,083	218
Hernia	1,015	763	252
Gonorrhea	647	145	502
Underweight	429	406	23
Pyorrhea	159	132	27
Varicocele	136	115	21
Varicose veins	104	95	9
Obesity	75	60	15
Undescended testicle	64	49	15
Hemorrhoids	57	43	14
Recent wounds	53	45	8
Other	225	166	59

* Total includes 2 men of unknown color, 1 with a remediable defect and the other with a nonremediable defect.

of the remediable defects. Of the 1,601 white registrants, 548 (34.2 per cent) may be considered to have remediable defects. The defects of these 548 men totaled 1,149, of which defective and deficient teeth and pyorrhea were the most common.

Similar data for colored registrants with two or more defects are given in table 6. For these colored men, primary, secondary and latent syphilis and gonorrhea are the most common remediable defects.

The total number of registrants qualified for limited military service with remediable defects are given in table 7, by color. In all, 7,543 (63.6 per cent) of the 11,869 registrants qualified for limited military service have remediable defects, and through correction and treatment these men may be made fit for military duty. The percentage of these colored registrants with

TABLE 5.—*Remediable Defects Among White Registrants Qualified for Limited Military Service with Two or More Defects Disqualifying for General Military Service*

	Total	Number of Defects			
		2 Defects	3 Defects	4 Defects	5 Defects
Registrants qualified for limited military service	1,601	1,416	162	22	1
Registrants with remediable defects	548	501	42	4	1
Total remediable defects	1,149	1,002	126	16	5
Primary, secondary and latent syphilis	140	119	17	3	1
Defective and deficient teeth	336	301	33	2	..
Hernia	135	121	11	3	..
Gonorrhea	43	38	4	1	..
Underweight	85	79	6	..	..
Pyorrhea	189	163	21	4	1
Varicocele	34	31	3	..	..
Varicose veins	39	32	5	2	..
Obesity	20	17	2	..	1
Undescended testicle	13	11	1	1	..
Hemorrhoids	11	7	4	..	..
Recent wounds	4	4	..	..	..
Other	100	79	19	..	2

TABLE 6.—*Remediable Defects Among Colored Registrants Qualified for Limited Military Service with Two or More Defects Disqualifying for General Military Service*

	Total	Number of Defects			
		2 Defects	3 Defects	4 Defects	6 Defects
Registrants qualified for limited military service	825	706	104	14	1
Registrants with remediable defects	519	473	43	3	..
Total remediable defects	1,087	946	129	12	..
Primary, secondary and latent syphilis	401	362	36	3	..
Defective and deficient teeth	159	127	29	3	..
Hernia	143	133	10	..	..
Gonorrhea	231	213	15	3	..
Underweight	6	3	3	..	..
Pyorrhea	74	47	24	3	..
Varicocele	3	3	..	..	..
Varicose veins	15	11	4	..	..
Obesity	3	2	1	..	..
Undescended testicle	5	5	..	..	..
Hemorrhoids	6	5	1	..	..
Recent wounds	4	4	..	..	..
Other	37	31	6	..	..

remediable defects (83.2 per cent) was found to be higher than that of the white registrants (53.3 per cent).

The nature of the 8,712 remediable defects of these 7,543 registrants is shown in thirteen groups in table 8. Primary, secondary and latent syphilis was the most common, with 2,752, or 31.6 per cent of these defects, in this group. Defective and deficient teeth were the defects of 1,796 registrants and hernia of 1,293. Gonorrhea was stated for 921 registrants. The nature of the remediable defects differed considerably for white and colored registrants.

The classifications of the whole group of 47,880 registrants included in this analysis have been studied in view of availability for military service and rehabilitation (table 9). In addition to the 25,184 classed available for general military service (52.6 per cent), 7,543 registrants available for limited military service (15.8 per cent) may have remediable defects, while 15,153 (31.6 per cent) were disqualified (IV-F) or have defects considered nonremediable. Thus in considering possible manpower for military service, after correction and treatment possibly around two thirds of the registrants in Tennessee may be made available. The proportion of colored men (approximately three fourths) appears to be higher than that of the white men (two thirds).

TABLE 7.—*Number and Percentage of Registrants Qualified for Limited Military Service with Remediable Defects, by Color*

	Total		White		Colored	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Total for limited military service	11,869*	100.0	7,798	100.0	4,069	100.0
Total with remediable defects	7,543*	63.6	4,157	53.3	3,385	83.2
With one defect	6,476*	54.6	3,609	46.3	2,866	70.4
With two or more defects	1,067	9.0	548	7.0	519	12.8
Total with one or more nonremediable defects	4,326*	36.4	3,641	46.7	684	16.8

* Total includes 2 registrants with color unknown, 1 with one remediable defect and the other with a nonremediable defect.

TABLE 8.—*Nature of Remediable Defects of 7,543 Registrants Qualified for Limited Military Service, by Color*

	Total		White		Colored	
Nature of Defects	Number	Per Cent	Number	Per Cent	Number	Per Cent
Total defects	8,712*	99.9	4,758	99.9	3,953	99.9
Primary, secondary and latent syphilis	2,752*	31.6	647	13.6	2,104	53.2
Defective and deficient teeth	1,796	20.6	1,419	29.8	377	9.5
Hernia	1,293	14.8	898	18.9	395	10.0
Gonorrhea	921	10.6	188	4.0	733	18.5
Underweight	520	6.0	491	10.3	29	0.7
Pyorrhea	422	4.8	321	6.7	101	2.6
Varicocele	173	2.0	149	3.1	24	0.6
Varicose veins	158	1.8	134	2.8	24	0.6
Obesity	98	1.1	80	1.7	18	0.5
Undescended testicle	82	0.9	62	1.3	20	0.5
Hemorrhoids	74	0.8	54	1.1	20	0.5
Recent wounds	61	0.7	49	1.0	12	0.3
Other	362	4.2	266	5.6	96	2.4

* Total includes 1 registrant with color unknown.

TABLE 9.—*Classification of 47,880 Registrants According to Availability for Military Service with Correction of Remediable Defects, by Color*

		Available for General Military Service		Available for Limited Service and with Remediable Defects		Nonremediable Defects and Disqualified	
	Total	Number	Per Cent	Number	Per Cent	Number	Per Cent
Total	47,880*	25,184*	52.6	7,543*	15.8	15,153*	31.6
White	36,795	20,196	54.9	4,157	11.3	12,442	33.8
Colored	11,075	4,984	45.0	3,385	30.6	2,706	24.4

* Total includes 10 of unknown color, of whom 4 were accepted for military service and 1 for limited service with remediable defects and 5 have nonremediable and disqualifying defects.

In view of the need for manpower for military duty the group of registrants rejected from general military service who have defects which are considered remediable represents a large force which can be restored for service for the country. This group of men with remediable defects represents American citizens on whom rests no less responsibility for military service than on their fellow citizens found to be physically acceptable. Facilities are now being made available under the plan adopted by Selective Service for rehabilitating men with remediable defects in order that they may take their proper place during this national emergency and also that these men may be made physically stronger for life as healthy citizens.

Summary

1. The results of examinations of 47,880 registrants by the examining physicians of the local boards in Tennessee between Feb. 15, 1941 and Jan. 1, 1942 and the rejections of any of these men sent to induction stations during this period have been studied.

2. Slightly over one half (52.6 per cent) of these registrants were considered qualified for general military service. Of the 22,696 registrants not qualified for general military service, 20,497 were rejected by local boards and 2,199 by induction stations.

3. Among the 43,034 registrants on whom serologic tests were made, 8.3 per cent were found to have syphilis, with the percentage of colored men (26.3 per cent) nearly ten times that of white men (2.7 per cent). The second most common among these diseases and conditions was musculoskeletal defects, causing 7.4 per cent of these men to be classed I-B or IV-F. Other very prevalent defects were teeth defects, diseases of the eyes and diseases of the cardiovasclar system.

4. The registrants with diseases or conditions causing them to be classed I-B (qualified for limited military service) have been considered as men who might be suitable for service after correction. Their defects have been studied, and the nature of the so-called remediable defects are shown. Although all defects classed "remediable" may not be considered to be correctable, it is felt that a fairly accurate estimate may be made of the number of men who might be available for military service through rehabilitation.

5. Of the 11,869 registrants classed I-B (qualified for limited military service), 9,443 (79.6 per cent) were found to have only one defect causing classification I-B, 2,122 (17.9 per cent) two defects causing classification I-B and 304 (2.6 per cent) three or more defects causing classification I-B.

6. In all, 7,543 (63.6 per cent) of the 11,869 registrants classed I-B may have remediable defects and through correction and treatment may be prepared for general military duty.

7. The nature of the 8,712 remediable defects of these 7,543 registrants was determined. Primary, secondary or latent syphilis was the most common, with 2,752 (31.6 per cent) of these defects in this group. Defective and deficient teeth were the defects for 1,796 registrants, hernia for 1,293 and gonorrhea for 921.

8. In addition to the 25,184 registrants classed I-A (available for general military service), 7,543 registrants who were qualified for limited military service may have remediable defects. Thus in considering possible manpower for military service through correction and treatment, approximately two thirds of the registrants in Tennessee may be made available for service.

HARPER HOSPITAL UNIT DEPARTS

According to the *Detroit Medical News* the "sons and daughters" of Harper Hospital, Detroit, witnessed a ceremony on July 13 at which the Harper Hospital Unit, General Hospital No. 17, received its colors. The hospital unit has since left for camp for training. The speakers at the ceremony were introduced by Dr. Louis J. Hirschman; the colors were presented by the superintendent of Harper Hospital, Dr. Stewart Hamilton, and were accepted by the director of the Seventeenth General Hospital Unit, Col. Henry R. Carstens. During World War I the Harper Hospital Unit was Base Hospital No. 17. Among those who had been on the staff of both units in the two wars are Colonel Carstens, Lieut. Col. Edward D. Spalding, Majors Clair L. Douglas and Harold B. Fenech, and J. Donald Mabley. The roster of General Hospital No. 17, as given by the *Detroit Medical News*, is as follows:

COLONELS
Carstens, Henry R.

LIEUTENANT COLONELS
Ashley, L. Byron
Spalding, Edward D.

MAJORS
Callaghan, Thomas T.
Cook, William A. (D. C.)
Donald, Douglas
Douglas, Clair L.
Fenech, Harold B.
Harris, Herbert W.
Horan, Thomas N.
Lemmon, Charles E.
Mabley, J. Donald
Meyers, Solomon G.
Perkin, Frank S.
Price, Alvin E.
Tulloch, John C.
Warren, Wadsworth
Wilcox, Leslie F.

CAPTAINS
Becker, Abraham
Beckwitt, Morris
Fuller, Hugh M.
Hollister, John P.
LaBerge, James M.
Lauppe, Frederick A.
McClure, Robert W.
McKean, G. Thomas
Murphy, John M.
Nielsen, Aage E.
Schoenfeld, John B.
Schroeder, Carlisle F.
Speck, Conrad F. (D. C.)
Steinberg, Irvin H. (D. C.)
Stockwell, Benjamin W.
Trombley, Joseph J.
Watts, Frederick B.
Weed, Ralph M.

LIEUTENANTS
Belanger, William G.
Dixon, Ralph C.
Eno, Laurel S.
Mollin, Edward L.
Nigro, Norman D.
Reader, Zar A. (D. C.)
Roche, Andrew M.
Shumaker, Edward J.
Summers, William A.
Wessels, Robert R.
Wunsch, Richard E.

MOUNT SINAI HOSPITAL UNIT CALLED INTO SERVICE

U. S. Army General Hospital No. 3 has been ordered into service and will soon be sent to a training center. The hospital unit has been organized and equipped by Mount Sinai Hospital, New York, thus perpetuating a tradition of military service by Mount Sinai dating back to the Civil War. In the first world war the Mount Sinai Unit was Base Hospital No. 3 of the American Expeditionary Forces, which during its location at Vauclaire, France, accommodated 2,000 patients. The entry of the Mount Sinai Hospital Unit into active service will raise to several hundred the number of doctors, nurses, employees and trustees who have been called to active duty. Several physicians trained at Mount Sinai were serving on Bataan Peninsula and Corregidor and were reported missing. Last month Dr. Goodell G. Klevan, member of the staff of Mount Sinai, was lost at sea through enemy action.

BADGE OF ARMY OF OCCUPATION OF GERMANY AWARDED

By act of Congress a new army decoration has been created known as the Army of Occupation of Germany Medal, which is being awarded to all persons who served in the United States Army at any time from the armistice until the declaration of peace and who rendered service in Germany or Austria-Hungary as a member of the army of occupation or in connection with other official duty. On account of the need for bronze the actual medal will not be struck until the war is over, but in the meantime the War Department has issued the corresponding ribbon, which may now be worn by persons entitled to this decoration.

The ribbon of the Army of Occupation of Germany Medal consists of a wide central stripe of black edged with white borders, which recalls the colors of Prussia. The whole is edged with narrow stripes of red and blue separated by a wavy line. It is also the only ribbon containing black now worn by personnel of our army. The Indian Wars Campaign Badge, worn by some of the old officers of the Army, is red edged with black, but nobody on the active list of the Army has this ribbon.

Six persons at the Medical Field Service School, Carlisle Barracks, Pa., are entitled to the Army of Occupation of Germany Medal. In alphabetical order they are: 1. Master Sergeant Edward J. Austin, sergeant major of the 32d Medical Battalion, who served in Germany as a corporal, medical department, attached to the 4th Division at Neuwied and other stations on the Rhine. 2. Col. Emmett M. Connor, Infantry, liaison officer at the Medical Field Service School, who served in Germany as a second lieutenant, 9th Infantry, at Coblenz. 3. Col. Edgar Erskine Hume, Medical Corps, who served as a lieutenant colonel, Medical Corps, with the army of occupation in Hungary. 4. Col. Albro Lefils Parsons, Medical Corps, who served as a major, Medical Corps, and member of the American military mission in Berlin. 5. Col. Earl D. Quinnell, Medical Corps, served as a captain, Medical Corps, 5th Division, near Luxembourg. 6. Col. Archie F. Reed, Infantry, who served as a second lieutenant, 30th Infantry, 3d Division, at Andremach and Mayen on the Rhine.

AMICUS MEDICI

To keep in touch with colleagues in the military services, Bronx Hospital, New York, has begun publishing a little journal under the editorship of Dr. Joseph Felsen, with Dr. William Wolarsky as associate editor. They hope that the pages of *Amicus Medici* will consist largely of contributions from staff members who are now serving their country. In the first issue is a letter from Lieut. Isidore Bernstein giving his impressions of northern Ireland, as well as greetings from Louis Altschul, president of the board of directors of the Bronx Hospital, and from Dr. Meyer Rosensohn, president of the medical board. The following physicians from this hospital are now serving in the military services:

Jules Alkoff
David Arbuse
Lionel S. Auster
Alfred J. Bernstein
Isidore Bernstein
Michael H. Gould
Paul E. Gutman
Joseph H. Hillman
Paul A. Kaufman
Charles Klein
Benjamin E. Krentz
Louis Levinstein
Ben Lewis
Samuel Lipschitz
Julius K. Littman
Edward Mandell
Leo Nadvorney
Harry Orlov
Abraham B. Pemsler
Saul J. Reisman
Isidore Rothstein
Manuel Scham
Sydney Shapiro
I. Jerome Silverman
Abner Stern
Samuel Tripler
Louis Weinstein
Leo Wilson
Emanuel Blumenfeld
Arnold Teitlebaum
Marvin Linick
Daniel K. Adler
Edward J. Alderman
Harold S. Kaufman
Samuel R. Manelis
Morris R. Rapoport
Leon Singer
Arnold Breecker
Mervyn Schact
Harold H. Sage
Theodore Rosenberg

CHICAGO PHYSICIANS LEAVE FOR THE SOUTHWEST

Dr. John West, executive officer of Provident Hospital, Chicago, is reported to have resigned that position in order to accept a commission as major in a medical unit on duty in one of the Southwestern states. Dr. Harold Thatcher, head of the department of dermatology at the Provident Hospital, also a major, has already left for the unit. Dr. Arthur Thomas has been commissioned captain, and Drs. Ronald Jefferson, Earl Sheppard and E. V. Williams have been commissioned first lieutenants in the same hospital unit.

MEDICAL AND SURGICAL RELIEF COMMITTEE OF AMERICA

During June supplies valued at nearly $11,000 were shipped to first aid posts, hospitals and casualty stations in America and its possessions and to allied countries by the Medical and Surgical Relief Committee of America, 420 Lexington Avenue, New York City. The shipments included twenty-four emergency medical field sets, seven operating sets, two cases of assorted instruments, twenty-one cases of assorted drugs, three cases of laboratory equipment and one case of concentrated foods.

ORGANIZATION SECTION

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status.—S. 2248 has been reported to the House, proposing to amend the law relating to the care and custody of insane residents of Alaska. S. 2368 has passed the House and Senate, proposing to eliminate the mandatory requirement that medical statements be furnished to inductees under the Selective Training and Service Act of 1940 on their discharge. S. 2454 has been approved by the President, prescribing the relative rank of members of the Navy Nurse Corps in relation to commissioned officers of the Navy. H. R. 7273 has passed the House, proposing to authorize an appropriation not to exceed $20,000 for maintenance and replacements of government owned reproducers for sound reproduction records for the blind. H. R. 7311 has been reported to the House, proposing to grant domiciliary care and medical and hospital treatment to the veterans of World War II on a parity with veterans of other wars.

Bills Introduced.—S. J. Res. 155, introduced by Senator Bone, Washington, proposes to direct the chairman of the War Manpower Commission to take certain steps to speed up the utilization in suitable employment of the abilities and aptitudes of all employable handicapped persons. S. 2676, introduced by Senator Gillette, Iowa, for Senator Walsh, Massachusetts, and H. R. 7438, introduced by Representative Vinson, Georgia, propose to provide for medical care and funeral expenses for certain members of the Naval Reserve Officers' Training Corps. H. R. 7411, introduced by Representative Coffee, Washington, proposes to amend the Social Security Act to enable states to provide medical care for recipients of public assistance. H. R. 7415, introduced by Representative Celler, New York, proposes benefits for the injury, disability, death or enemy detention of civilians and for the prevention and relief of civilian distress arising out of the present war. H. R. 7432, introduced by Representative Durham, North Carolina, proposes to establish a Pharmacy Corps in the Army, appointments to be made in the grade of second lieutenant from pharmacists between the ages of 21 and 32 years who are graduates of recognized schools or colleges of pharmacy requiring four years of instruction for graduation.

DISTRICT OF COLUMBIA

Bills Introduced.—S. 2673, introduced by Senator Clark, Idaho, for Senator McCarran, Nevada, in defining the real property exempt from taxation in the District of Columbia, provides, among other things, for the exemption of hospital buildings belonging to and operated by organizations which are not organized or operated for private gain and for the exemption of school, college and university buildings belonging to and operated by institutions not organized or operated for private gain and embracing the generally recognized relationship of teacher and student. H. R. 7406, introduced by Representative Hunter, Ohio, deals also with the exemption of real property from taxation and provides exemption for all real property used for religious, charitable, educational, scientific, hospital, clinic, orphanage, library, literary, art gallery, cemetery or other benevolent purposes when such property is used by any institution, corporation, association, trust, community chest, fund or foundation having as its objective and purpose the accomplishment of any one, or any combination, of the purposes mentioned. Exemption will be granted only if no part of the net earnings inures to the benefit of any private shareholder or individual.

WOMAN'S AUXILIARY

Indiana

The history of Allen County pioneers in medicine has been started by Mrs. E. M. Van Buskirk. For the Red Cross the auxiliary is making a cross file of all persons who have qualified in junior, standard and advanced first aid. The index of names is being filed by streets, precincts and townships, so that in case of need it will be a simple matter to rush the nearest person qualified in first aid assistance to the victim. Four auxiliary members will be in the Red Cross office each half day until the work is completed. Mrs. E. A. King has been named chairman of the Allen County Nutrition Council for Defense. Dr. Jessie C. Calvin, another member of the auxiliary, also has been named to the council. The March meeting of the auxiliary was a dessert-supper meeting at the Methodist Hospital. The program consisted of a symposium on "Nutrition for Defense."

"The Big Family" was the book reviewed by the LaPorte librarian at the meeting of the Woman's Auxiliary to the LaPorte County Medical Society.

South Dakota

The annual Doctor's Day Dinner was held, March 28, at Sioux Falls. Mrs. Anton Hyden, auxiliary president of the Seventh District Medical Society, introduced Eleanor Tenold, who played some piano selections, after which the Ament children did tap dancing. Dr. E. S. Stenberg, president of the Seventh District Medical Society, spoke.

The advisory board meeting of the Woman's Auxiliary to the South Dakota State Medical Association was held in March at the home of the state president, Mrs. F. C. Nilsson, Sioux Falls. Despite war conditions, the auxiliary reported a gain in membership of approximately 20 per cent. The state convention was held at Sioux Falls May 13-15.

The South Dakota state medical auxiliary held its annual meeting at Sioux Falls, May 13-15. The following officers were elected for the ensuing year: president, Mrs. J. C. Hagin, Miller; president-elect, Mrs. D. Baughman, Madison; vice president, Mrs. G. S. Adams, Yankton; second vice president, Mrs. E. A. Rudolph, Aberdeen; recording secretary, Mrs. Edwin S. Stenberg, Sioux Falls; corresponding secretary and treasurer, Mrs. E. Trent Stout, Pierre. A luncheon and style show followed the business session. In the afternoon there was a tea at the home of Mrs. E. E. Gage, Riverview Heights, followed by a banquet at the Coliseum in conjunction with allied professional groups.

Ohio

The annual meeting of the Woman's Auxiliary to the Ohio State Medical Association was held in Columbus on April 29 and 30. The president, Mrs. W. W. H. Curtiss, introduced Mrs. Ralph W. Hoffman, convention chairman. Dr. Edward J. McCormick, now president of the Ohio State Medical Association, gave a talk on medicine—past, present and future. Mrs. Dale P. Osborn, now president of the woman's auxiliary, reported that Ohio had thirty-one counties organized and a membership of one thousand, six hundred and seventy-six. The treasurer's report was as follows: receipts $1,919.59, expenses $1,125.09, scholarship fund $411.24, sinking fund $85, balance in checking account $298.26. It was voted to establish a scholarship loan fund for nurses. Other officers elected were as follows: Mrs. R. B. Poling, Youngstown, vice president; Mrs. M. E. Kishman, Lorain, secretary and treasurer; Mrs. J. L. Stevens, Mansfield, president-elect. It was voted to ask the national auxiliary to take some action at Atlantic City regarding the dues of wives whose husbands are in the service.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Geiger Award in Public Health. — Miss Grace Louise Ivanhoe, M.S., El Cerrito, who recently completed work in parasitology and tropical medicine at Tulane University of Louisiana School of Medicine, New Orleans, has been awarded the Geiger Medal for an outstanding thesis in the field of public health and sanitation. The Geiger Medal has for a number of years been presented to a graduate student on a public health problem of interest to the Southern states or countries contiguous to these states. Miss Ivanhoe's research work was largely concerned with amebiasis.

COLORADO

Society News.—Dr. Leo L. J. Hardt, Chicago, discussed "Gastroscopic Findings in Far Advanced Pulmonary Tuberculosis" before the Denver Sanatorium Association, May 19. ——The theoretical and practical basis of blood transfusions was discussed by Drs. William A. H. Rettberg and Edward R. Mugrage, both of Denver, before the Medical Society of the City and County of Denver recently. The society was addressed, June 2, by Drs. Paul J. Connor and Robert P. Johnston, both of Denver, on "Tropical War Medicine" and "Treatment of Fracture of Neck of Femur by Osteosynthetic Tube" respectively. Dr. Guy C. Cary, Grand Junction, president of the state medical society, also spoke.——The Northeast Colorado Medical Society was addressed on May 21 in Sterling by Dr. John W. Amesse, Denver, who spoke on "Primitive Medicine in the Philippines," and Mr. Harvey T. Sethman, Denver, "Needs of the Army for Medical Men and Its Present Day Streamline Method of Selection."

CONNECTICUT

Psychiatrists Elect Officers. — Dr. Daniel P. Griffin, Bridgeport, was elected president of the Connecticut Society for Psychiatry and Neurology at its recent annual meeting. Dr. Francis M. Shockley, Stamford, was chosen vice president and Dr. Harry M. Tiebout, Greenwich, secretary-treasurer.

Community Hospital Receives $150,000.—Under the will of the late E. Frank Bugbee, the Windham Community Memorial Hospital, Willimantic, has received a bequest of $150,000, the income from which may be used for the general running expenses of the hospital. In addition a bequest of $100,000 has been provided for the hospital at the death of Mrs. Bugbee. Mr. Bugbee was a former president of the board of directors of the hospital.

Crippled Children Clinic.—The state department of health has opened a new state crippled children clinic at the Charlotte Hungerford Hospital, Torrington, in accordance with a recommendation of the Crippled Children Technical Medical Advisory Committee of the state medical society. The first clinic was held on July 14, and subsequent clinics will be conducted on the second Tuesday of each month. The new clinic will serve children from the neighboring towns of Avon, Barkhamsted, Burlington, Canaan, Canton, Colebrook, Cornwall, Goshen, Granby, Harwinton, Hartland, Litchfield, New Hartford, Norfolk, North Canaan, Plymouth, Salisbury, Sharon, Thomaston, Torrington, Watertown and Winchester.

INDIANA

Abandon Serum Centers for Pneumonia.—The state department of health recently decided to close its serum centers located in different sections of the state and distribute serum instead directly from the state board of health. Under the new plan the serum will be available on request, and it is believed that the change will not interfere with prompt delivery. The new decision was made on the basis of a survey and the opinion of the pneumonia control committee of the state medical association.

District Meetings.—Dr. Howard Allison Miller, Marion, addressed the Eleventh Councilor District Medical Society recently in Flora on "Nonsurgical Treatment of Pelvic Conditions" and Dr. James O. Ritchey, Indianapolis, "Nontuberculous Lesions of the Chest."——At a meeting of the Second Councilor District Medical Society in Washington, June 2, the speakers were Drs. James N. Collins and Cyrus J. Clark, Indianapolis, on "X-Ray Films and Their Diagnosis" and "The Cardiac as a Surgical and Obstetric Risk" respectively.

LOUISIANA

New State Health Officer.—Dr. David E. Brown, New Orleans, has been appointed state health officer and president of the Louisiana Board of Health to succeed Dr. Christopher L. Mengis, New Orleans. Dr. Mengis will continue his association with the board as assistant state health officer and director of the division of local health service in accordance with an early agreement. The latter position had been open since the resignation of Dr. Ford S. Williams, New Orleans, to report for duty with the U. S. Public Health Service. Dr. John S. Anderson had been acting director of the division of local health service but resigned to enter private practice. Dr. Brown graduated at the Memphis Hospital Medical College in 1907.

MAINE

Attorney Locke Elected First Nonmedical Member.—Herbert E. Locke, attorney of Augusta and legal counsel for the Maine Medical Association for many years, was elected an honorary member of the association during its annual meeting in Poland Spring, June 21. This is the first nonmedical membership the association has conferred.

MARYLAND

Three Hundred Thousand Dollars for Infantile Paralysis Study at Johns Hopkins.—The National Foundation for Infantile Paralysis has given a $300,000 grant to Johns Hopkins University, Baltimore, for a long time study of the disease. This is the largest single grant made by the foundation since it was organized in 1938. The money will be used to establish and conduct a Center for the Study of Infantile Paralysis and Related Viruses at the medical school and will be allocated over a five year period. Work at the center will be under the direction of Dr. Kenneth F. Maxcy, professor of epidemiology in the school of hygiene and public health. Three members of the staff who will be named to assist Dr. Maxcy include Dr. Howard A. Howe and Dr. David Bodian, formerly of the department of anatomy in the medical school, and Robert C. Mellors, Ph.D., a biochemist from Western Reserve University School of Medicine, Cleveland. These persons have already started work. In setting up the center, adequate laboratory space and facilities have been provided and resources of the new grant will permit the investigators to carry on their studies in the field as well as in the laboratory as opportunity may be presented. The ultimate objective is to gain a more complete understanding of the spread of the poliomyelitis virus not only within the human body but in the community, from one individual to another. Much additional knowledge is necessary before it will be possible to devise effective measures for the suppression of the disease.

MASSACHUSETTS

Faculty Changes at Tufts.—Dr. Elmer W. Barron, a member of Tufts College Medical School, Boston, since 1911 and professor of pediatrics since 1929, has been made professor emeritus of pediatrics, according to the *New England Journal of Medicine*. Other changes announced include the following promotions:

Dr. James M. Baty, professor of pediatrics.
Dr. Francis C. McDonald, clinical professor of pediatrics.
Dr. Richard Wagner, assistant professor of pediatrics.
Dr. Bernard Appel, assistant professor of dermatology.
Dr. Francis P. McCarthy, lecturer in dermatology.
Harry H. Powers, Ph.D., associate professor of biochemistry.

Headquarters for Medical Service Plan.—The Massachusetts Medical Society has established capital funds necessary to start the Massachusetts Medical Service in business, and headquarters have been opened at 230 Congress Street, Boston. The service is a medical care plan approved by the state society at its recent annual meeting and expected to be available to the public about September 1. Dr. James C. McCann, Worcester, was elected president of the Massachusetts Medical Service at the first meeting of the board of directors in Boston, June 23. The state charter was granted on May 27.

Medicolegal Conference. — The Massachusetts Medico-Legal Society and the department of legal medicine of Harvard Medical School will cooperate in a conference at the Mallory Institute of Pathology, Boston City Hospital, on September 30. The department of legal medicine will sponsor a postgraduate course October 1 to 3 and 8 to 10 to cover

postmortem investigations made from the medicolegal standpoint and to study various procedures associated with possible crime detection. Attendance will be limited to six. Additional information may be obtained from the Department of Legal Medicine, Harvard Medical School, 25 Shattuck Street, Boston.

Evans Memorial Building Opened.—The new building of the Robert Dawson Evans Memorial in Boston was recently opened. The unit is nine stories high and provides service for the Massachusetts Memorial Hospitals, such as the kitchens, dining rooms and the admitting, bookkeeping and business offices, as well as the wards and laboratories of the Evans Memorial. The fifth floor of the building has been left unfinished so that space will be available for expansion and growth of the memorial when additional funds become available for clinical investigation, the purpose for which the memorial was established. The sixth floor is the research laboratory floor. All the laboratories contain services which can be adapted to work in clinical physiology, biochemistry, bacteriology and immunology, neurology and their subdivisions. Dr. Chester S. Keefer, Boston, is director of the unit.

NEBRASKA

Personal.—Dr. Reuben Allyn Moser, Omaha, has been appointed assistant superintendent of the University of Nebraska Hospital, Omaha, to succeed Dr. Francis J. Bean, who has gone to Bennington, Vt. Dr. Moser has accepted the position on a part time basis.

Dr. Tollman Named Assistant Dean.—Dr. James P. Tollman, associate professor of clinical pathology at the University of Nebraska College of Medicine, Omaha, has been appointed assistant dean, effective July 1. Dr. Tollman graduated at the college in 1929 and has been a member of the faculty since 1931.

NEW JERSEY

New Jersey Starts Medical Health Plan.—The Medical-Surgical Plan of New Jersey, which was recently approved by the state medical society, went into operation on July 10, when contracts were distributed to seven hundred employees of a paper manufacturing company in Elizabeth. The Medical-Surgical Plan of New Jersey is assisted by the Hospital Service Plan of the state. For the present the service aims to enroll groups of one hundred or more employees in war production plants. According to the New York *Times* the plan offers benefits, tentatively fixed on a schedule, ranging up to $150 for medical and surgical care in semiprivate accommodations of any approved general hospital in the state. Only specified illnesses that require hospitalization are compensable. An individual subscriber pays 75 cents a month. Subscriptions covering all members of a family group, regardless of the number of children, costs $2 a month. The subscriber, it was emphasized, has "free choice" of his physician, and surgical benefits are available regardless of the number of required hospital admissions in the contract year. Medical benefits are allowed in cases requiring more than three days' hospitalization, provided twenty-one days have not been used in a contract year. Enrolment will be made available in each county where at least 51 per cent of the licensed physicians have agreed to participate. More than half of the physicians in the state already had approved the plan, it was said, but the required proportion has been met so far only in nine of the state's twenty-one counties, including Essex, Hudson, Bergen and Passaic counties. The plan is under supervision of the state department of banking and insurance. The facilities of the Hospital Service Plan are being used for enrolment, which also places the medical-surgical arrangement under the supervision of the state department of institutions and agencies.

NEW YORK

Lake Keuka Meeting Canceled.—The Lake Keuka Medical and Surgical Society, which usually meets in July, has canceled its annual summer meeting for the second time in more than forty years, because of the war. In 1935 the society failed to meet for the first time since its organization on account of the flood which swept the area. Drs. Walter A. Calihan, Rochester, president, Kenneth T. Rowe, Dansville, vice president, and Virgil Henry F. Boeck, Dundee, secretary-treasurer, will continue as officers of the society until the 1943 meeting.

New York City

Homer Swift Named to University Council.—Dr. Homer F. Swift, member of the Rockefeller Institute for Medical Research, has been appointed to the council of New York University for a four year term. Dr. Swift once served as associate professor of medicine at Columbia University College of Physicians and Surgeons and Cornell University Medical College. In 1933 he received the annual Alumni Meritorious Service Award of New York University, where he graduated in 1906 for "distinguished service to the university." The new appointment was made under a plan initiated in 1939 to foster greater alumni participation in the direction of the university, according to the New York *Times*.

Campaign to Reduce Accidents.—The Greater New York Safety Council opened a safety campaign on June 26 to save "war casualties" through prevention of all types of accident. The program will include neighborhood and association meetings to acquaint the public with ways to avoid hazards in factories, homes and the streets. Gasoline stations will distribute safety pamphlets to drivers. The police and other agencies will assist and the council's committee of 100, made up of business executives and leading persons in the city, will sponsor the project. The program will serve to coordinate as a war measure the council's regular safety work. Close attention will be paid to accidents in war production plants, a list of which has been made available to the council. An industrial committee will set up factory safety programs on methods already proved in other plants, according to the New York *Times*.

Dr. Rice Retires as Health Officer.—Dr. John L. Rice, since 1934 health commissioner of New York City, is retiring on account of ill health but will continue to serve as an adviser to the department. Dr. Ernest L. Stebbins, since 1940 professor of epidemiology, Columbia University College of Physicians and Surgeons, has been named to succeed Dr. Rice. A native of Granby, Conn., Dr. Rice graduated at Johns Hopkins University School of Medicine, Baltimore, in 1917. In 1912 he worked in the laboratory of the Syracuse City Department of Health, going to Ottawa, Canada, as assistant city bacteriologist in 1913. He was a public health worker in Costa Rica, Guatemala and Panama for the International Health Board of the Rockefeller Foundation from 1917 to 1919, and in Trinidad, British West Indies and Puerto Rico from 1921 to 1923. He was with the Mason County, Ky., health department from 1919 to 1920, when he became district state health officer of New York. In 1923 he went to New Haven, Conn., as health officer, remaining there until 1934, when he was appointed New York City health commissioner. He is now president of the American Public Health Association. Dr. Stebbins graduated at Rush Medical College, Chicago, in 1929. He was epidemiologist for the Virginia State Department of Health in 1931 and health officer of Henrico County, Va., from 1932 to 1934, when he went to the New York State Department of Health, subsequently serving as epidemiologist, district state health officer, director of the division of communicable diseases and assistant commissioner of health.

NORTH CAROLINA

Changes in Health Officers.—Dr. John S. Chamblee, Windsor, health officer for Bertie and Chowan counties, will take over the work in Gates County, succeeding Dr. Thomas G. Faison, Winton, health officer for Hertford and Gates counties, who has entered active service.

Society News.—The Buncombe County Medical Society was addressed on June 22 in Asheville by Drs. Richard Torpin on "Roentgen Pelvimetry in Labor"; Robert B. Greenblatt, "Pellet Implantation in Endocrine Disorders," and Perry P. Volpitto, "General Use of Barbiturates"; all are members of the faculty of the University of Georgia School of Medicine, Augusta, Ga.

Personal.—Dr. Paul P. McCain, superintendent of the North Carolina Sanatorium for the Treatment of Tuberculosis, Sanatorium, and the Western North Carolina Sanatorium, Black Mountain, has been named to a similar position at the Eastern North Carolina Sanatorium now under construction in Wilson. ——Herman C. Mason, Ph.D., has been appointed associate professor of bacteriology at the University of North Carolina School of Medicine, Chapel Hill.

NORTH DAKOTA

Personal.—Dr. Olaf J. Hagen, Fargo, was awarded an honorary degree of doctor of laws at the fiftieth anniversary commencement of Concordia College, Moorhead, Minn., June 2.

Special Society Election.—Officers of the North Dakota Society of Obstetrics and Gynecology, chosen at its recent annual meeting, include Drs. Jacob H. Fjelde, Fargo, president; Edwin H. Boerth, Buffalo, vice president, and Ralph E. Leigh, Grand Forks, secretary-treasurer.

OREGON

Dr. Baird Named Acting Dean of Medical School.—Dr. David W. E. Baird Jr., associate dean and associate clinical professor of medicine of the University of Oregon Medical School, Portland, has been appointed acting dean of the school during the absence of Dr. Richard B. Dillehunt, who has been in poor health. During the coming year Dr. Dillehunt will study and rest, having recently been granted a sabbatical leave by the state board of higher education. Dr. Dillehunt is also clinical professor and head of the division of orthopedic surgery at the school.

Director of Mental Hygiene Appointed.—Dr. Gerhard B. Haugen, Portland, who has just completed a year of postgraduate work at Johns Hopkins University School of Hygiene and Public Health, Baltimore, is the director of the division of mental hygiene, which was established last year under the supervision of the U. S. Public Health Service. The new unit was set up by Dr. Curtis R. Chaffin, Portland, of the public health service, who has been acting director and who has been transferred to the U. S. Marine Hospital, Ellis Island, New York, to engage in clinical work in the neuropsychiatric division of the hospital there. Dr. Haugen graduated at the University of Oregon Medical School, Portland, in 1935.

PENNSYLVANIA

District Meeting.—The Fifth Councilor District of the Medical Society of the State of Pennsylvania, comprising Adams, Cumberland, Dauphin, Franklin, Lancaster, Lebanon, Perry and York counties, was addressed, among others, July 9, in Harrisburg by Drs. William Baird Stuart, Carlisle, on "Ureteral Calculi"; Harry B. Thomas, York, "Practical Problems in Diabetes"; Charles R. Reynolds, Harrisburg, major general, U. S. Army, "Tuberculosis in the War" and Edward L. R. Bortz, Philadelphia, "New Light on Old Folks." A feature of the meeting was the presentation of fifty year testimonial certificates by Dr. Walter F. Donaldson, Pittsburgh, secretary of the state society, to Drs. George Alvin Harter, Maytown; Ferdinand Shoemaker, Kansas City, Mo.; Joseph E. Bogar, Millersburg; Roland Jessop, York; Louis Jordy, York; George S. Kinzer, Ickesburg; Samuel W. Miller, Lancaster; Benjamin F. Myers, Chambersburg; Charles J. Steim, Red Lion, and Henry Stewart, Gettysburg.

Philadelphia

Faculty Changes.—Three new appointments as heads of the departments of the Hahnemann Medical College and Hospital of Philadelphia were announced in the Philadelphia newspapers, July 9. Dr. William L. Martin was named professor and head of the department of surgery to succeed Dr. Gustave A. Van Lennep, who becomes professor emeritus of surgery. Dr. Newlin Fell Paxon was appointed professor and head of the department of obstetrics, succeeding Dr. Warren C. Mercer, who becomes professor emeritus of obstetrics. Dr. Henry S. Ruth was made professor and head of the department of anesthesia, succeeding Dr. James M. Godfrey, who also becomes professor emeritus. Dr. William M. Sylvis, formerly professor of anatomy, was appointed professor of surgery at the school.

SOUTH CAROLINA

Physician Honored.—Dr. James H. McIntosh, for forty-two years a practitioner in Columbia and formerly president of the Columbia Medical Society, was presented with a silver pitcher, May 20, in recognition of his many years of service in the community. Dr. McIntosh graduated at Columbia University College of Physicians and Surgeons, New York, in 1888. He has practiced in Columbia since 1900 and has served as president of the Seventh and Second district medical societies of South Carolina, the South Carolina State Medical Association, the Tri-State Medical Association of Virginia and the Carolinas, and the Association of Surgeons of the Atlantic Coast Line Railway.

TEXAS

District Meeting.—The North Texas Medical Association met in Terrell, June 2, for the following program:

Dr. Roy L. Grogan, Fort Worth, The Role of Cesarean Section in Modern Obstetrics.
Dr. George R. Herrmann, Galveston, Interpretation of Electrocardiogram and Coronary Artery Disease.
Dr. Albert O. Singleton, Galveston, Distention as a Complication of Abdominal Surgery and Surgery of the Spleen.
Dr. Milton A. Davison, Marlin, Prenatal Care.
Dr. Milford O. Rouse, Dallas, Diagnosis and Medical Management of the Gallbladder.
Dr. Paul M. Ramey, Temple, Surgical Treatment of the Gallbladder.

VIRGINIA

Special Societies.—At a meeting of the Virginia Society of Ophthalmology and Otolaryngology in Staunton, May 16, it was voted to form an associate membership which lasts for a five year period, at the end of which time the applicant is to obtain a certificate from either the national board of ophthalmology or otolaryngology or be dropped from the roll. Dr. Emmett T. Gatewood, Richmond, was named president-elect at this meeting and Dr. Guy R. Fisher, Staunton, was installed as president. Dr. Meade C. Edmunds, Petersburg, was reelected secretary-treasurer.——The Society of Chest Physicians of Virginia met in Richmond recently and elected the following officers: Drs. Frank B. Stafford, Sanatorium, president; Samuel E. Hughes, Danville, vice president, and Walter L. Nalls, Richmond, secretary-treasurer.

Changes in Health Personnel.—Dr. Ralph G. Beachley, Arlington, since 1938 director of public welfare and health in Arlington County, has been appointed assistant chief medical and liaison officer for the metropolitan area, succeeding the late Dr. William B. King. He was recently appointed regional consultant on emergency medical service for northern Virginia.——Dr. Abraham L. Gelperin, Baltimore, has been appointed venereal disease control officer of Richmond, effective May 15. He succeeds Dr. Aaron Wilson Brown, Pocahontas, who resigned recently to enter private practice.——Dr. Paul W. Bowden, Charlotte C. H., acting health officer of Charlotte County, has been appointed epidemiologist for Richmond.——Dr. William Grossman has resigned as director of the bureau of communicable diseases of the state health department, Richmond, to accept a commission in the U. S. Army.——Dr. Raymond De Van Kimbrough, Norfolk, was appointed on June 1 as state venereal disease control officer for the Tidewater Area.

WEST VIRGINIA

Society News.—Dr. Otis G. King, Bluefield, discussed "Treatment of Diabetes" before the Fayette County Medical Society in Oak Hill, May 19.——The Kanawha Medical Society was addressed in Charleston, May 12, by Dr. William Gayle Crutchfield, Charlottesville, Va., on "Low Back Pain and Its Association with Displaced Intervertebral Disks."——Dr. Charles A. Doan, Columbus, Ohio, addressed the Ohio County Medical Society, May 8, at Wheeling on "Differential Diagnosis and Treatment of Disease Primarily Involving the Spleen."

WISCONSIN

Surgeons' Group Changes Name.—The name of the Milwaukee Society of Clinical Surgery has been changed to the Wisconsin Academy of Surgery. Future members will be required to be either a specialist certified by the American Board of Surgery or a fellow of the American College of Surgeons. There will be three meetings a year instead of the usual five. The next meeting will be on November 19.

GENERAL

Roentgen Ray Society Moves Meeting to Chicago.—The American Roentgen Ray Society will hold its annual meeting at the Palmer House, Chicago, September 15-18, instead of in Atlantic City. Haddon Hall, where the meeting was to be held, has been taken over by the government.

Dr. Rose Named Director of Red Cross in the West.—Dr. Milton Rose, professor of public health administration, University of Pennsylvania School of Medicine, Philadelphia, has been appointed director of medical and health service for the Pacific area of the American Red Cross, with headquarters in San Francisco. Dr. Rose graduated at Yale University School of Medicine, New Haven, Conn., in 1935.

Advisory Committee for Vitamin A Industry.—An informal advisory committee for the vitamin A industry has been appointed to confer with officials of the Office of Price Administration regarding pricing and distribution problems, it was announced on July 21. The committee held its first meeting in Washington, D. C., July 27, to discuss provisions of a proposed maximum price schedule for vitamin A oils and concentrates. The advisory panel is an outgrowth of a recent industry conference held in San Francisco between the Office of Price Administration and all branches of the industry.

Insurance Examiners Directory Not Authorized.—Information has been received by the American Medical Association concerning the Medical Directors Quarterly and the Medical Examiners Guide, which have been solicited through

the mails as recent as June 23. The Association has been informed that most companies have a mechanism for appointing their examiners which they have had in force for years, obviating any valid reason for this medical guide, and that no official recognition has been given to either the Medical Examiners Guide or to the Medical Directors Quarterly. Many life insurance companies use only the American Medical Directory and the Directory of Medical Specialists, depending on the Directory Report Service, published twice a month by the American Medical Association, to supplement its regular Directory. The letter soliciting subscriptions is written on a letterhead bearing the name Medical Directors Quarterly, Starks Building, Louisville, Ky., and dated June 23, 1942. Charles D. Dunne is given as the name of the publisher.

Smallpox Incidence Low.—Only 1,432 cases of smallpox were reported in the United States in 1941, an all time low for this disease, according to the *Statistical Bulletin* of the Metropolitan Life Insurance Company. The total compares with 2,795 registered in 1940, the previous low mark for smallpox. In Canada only 26 cases were reported, all but 1 of which appeared in the province of Saskatchewan. Nearly 500,000 cases of smallpox have been reported in the United States since 1921. Indiana alone was responsible for 37,902 cases. In the past Montana, Washington, Idaho and Oregon have generally been the states with the highest incidence. The lowest incidence is found in New England and the Middle Atlantic states, followed by states in the southeast corner of the country. That Indiana has been the outstanding exception to the rule is not surprising in view of the fact that a recent investigation by its department of health disclosed that less than 13 per cent of preschool children and not more than 53 per cent of the school children under 10 years of age had been vaccinated at the time the survey was made, the bulletin stated.

Fellowships for Latin Americans.—The Commonwealth Fund of New York is offering through the Pan American Sanitary Bureau fifteen fellowships for one year's study of public health subjects or postgraduate medical courses to properly qualified persons who are citizens of the other American republics. Fellowships in public health will be open to physicians, sanitary officers, technicians and public health nurses. These fellows will be selected through a system of cooperation with medical and health authorities of the different countries concerned, and whenever deemed advisable they will be interviewed by traveling representatives of the Pan American Sanitary Bureau. Each fellowship will provide living allowances while the holder is in the United States, travel costs and tuition. Knowledge of the English language will be among the requirements, and also the possession of certain specific qualifications. The bureau, the international health agency of the American republics, has been for some time the recognized clearing house for medical and public health fellowships in the United States, nearly one hundred Latin Americans now being in the United States under its auspices. Application blanks giving complete information will be available through the Commonwealth Fund, 41 East 57th Street, New York, the Pan American Sanitary Bureau, Washington, D. C., or chiefs of American missions in Latin America.

Fund for De Lee Research Fellowships in Obstetrics.—Three groups have joined together to help make the memory of Joseph B. De Lee a living force by creating the Joseph B. De Lee Memorial Trust, the income of which will be used to support research fellowships in obstetrics at the Chicago Lying-in Hospital. It is expected that the fund will be formally presented during a memorial service at the University of Chicago on October 28, Dr. De Lee's birthday. This is considered a most appropriate tribute to a man who devoted fifty intensive years to establishing institutions for the care of mothers and babies and to raising the standards of training of obstetricians. The De Lee Memorial Trust will provide the best possible obstetric training for the young doctors who will hold these fellowships.

Four groups closely associated with Dr. De Lee are especially invited to contribute to the trust fund: (1) his friends, (2) the Mother's Aid group, which was founded in 1904 to assist him and ever since has worked in the cause of better obstetrics, (3) former patients and children who owe something of their own happiness to him, (4) the hundreds of doctors and nurses who received obstetric training under his guidance.

The De Lee Memorial Trust, which will be administered by the University of Chicago, will be used exclusively for the maintenance of research fellowships in obstetrics. The principal will be kept intact with the qualification that up to 5 per cent of it may be used in any one year if this is considered wise.

FOREIGN

Colonel Le Souëf Prisoner of War.—A letter from Lieut. Col. Leslie E. Le Souëf, Australian Army Medical Corps, indicates that he is a prisoner in a German prison camp. Colonel Le Souëf, whose home is at Perth, West Australia, was a delegate from the Western Australian branch of the British Medical Association to the American Medical Association at its annual session in St. Louis in 1939, at which time he was president-elect of his branch. His letter, dated March 2, 1942, says that he is well and caring for some of his wounded compatriots. He states that limitations on prisoner mail do not make it possible for him to write to all of his many friends in the American medical profession.

Public Health Under Hitler's Rule.—The *Deutsche medizinische Wochenschrift* of April 10 points out that overwork, haste and restlessness are causing many cases of insomnia and that the taking of sleeping medicine has become a menace to public health. Prof. F. Hoff quotes Dr. Conti as saying that "the misuse of sleeping drafts is today so widespread that it is quite unbearable." The same publication states that in Lwow the Behringwerke has equipped a new laboratory for producing typhus serum and other measures are being taken to combat typhus. All inhabitants are required to visit the delousing stations and also to observe special village wash days, where all linen must be washed under public control. According to the *Bulletin des eidgenessischen Gesundheitsamtes,* Bern, volume 30, 1941, there were 1,103 cases of typhus in the "Wartheland" from January to June 1941, whereas from 1931 to 1939 there were only 27 cases.

According to the *Berliner Borsen-Zeitung* of May 25, Dr. Conti, health leader in the reich, declared that the German people are very healthy. He said that in the old reich there were 16 cases of typhus among Volksdeutsche and 62 cases among foreigners last year, while in the occupied areas 8 Germans, 220 foreigners and 672 Jews suffered from typhus during the same period. German prophylactic methods, Dr. Conti is reported to have said, have proved to be excellent. Influenza did not occur at all last winter. The crisis in scarlet fever has passed and diphtheria has been successfully fought. Despite the war, Dr. Conti said that only about 100,000 fewer children were born last year in greater Germany as compared with 1940. The infant mortality was no worse, and the death rate of mothers has been improved. The youth of Germany, he said, is healthy. Three thousand doctors are being turned out from the universities every year and "this is a very good thing, since doctors are needed."

The Charleroi Medical Society has opposed the officially established Doctors' Chamber, of which every doctor is required to become a member. The society sent a circular to its members summoning them to a meeting on May 17 at the Café des Colombophiles in Charleroi and pointing out that Romsee's decree cannot be accepted and adding that "in these difficult days, some try to enslave medicine. Medicine needs entire freedom to fulfil its mission." The circular was signed by Dr. Mayeur, president, and Dr. Dufour, secretary.

According to *Transocean* the police in Athens, May 19, ordered the closing of all theaters, schools, concert halls and movie houses in order to protect the public against spreading epidemics. According to *Svenska Dagbladet,* Stockholm, of May 20, all "obviously insanitary persons" have been forbidden to use public vehicles, in connection with recent measures taken against the spread of typhus.

Correspondents have reported, according to *Ny Dag* of May 15, that the food situation in Helsinki is critical and will continue so for two months. Several cases of scurvy have been reported from Helsinki as having been caused by the poor diet. According to the *Deutsche medizinische Wochenschrift,* Leipzig, May 8, Germans who have to stay for a long period in the occupied territories are advised to be vaccinated against typhus and typhoid, and, if they have to stay in the occupied territories in the east or "in the General Government," they should be vaccinated "in good time against spotted typhus as well."

The Dutch Ambulance Corps, according to *Volk en Vaderland,* Utrecht, May 8, is urging doctors and dentists and male nurses to join the ambulance corps on the eastern front.

CORRECTION

Dr. H. Grady Callison.—In THE JOURNAL, July 25, page 1030, in the item entitled State Civilian Defense Officials Commissioned in U. S. Public Health Service, under South Carolina, the title of Dr. H. Grady Callison should have been State Chief of Emergency Medical Service and not Deputy State Chief.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 20, 1942.

Control of Supply of Rubber Gloves

The reduction of rubber supplies due to the occupation of Malaya by the Japanese has made necessary restriction of the supply of rubber gloves to those whose use of them is essential. The supply of gloves to hospitals and medical institutions and through them to physicians, nurses and midwives will be controlled by the Ministry of Health. These persons must apply to the local health authority entitling them to obtain gloves. Physicians and nurses can obtain only three pairs, district nurses two pairs and nurses in private practice one pair. Hospitals and clinics can obtain gloves only on certificates issued by the public health authorities. The number they can obtain will depend on the circumstances, of which the more important are the number of beds and the number of operations performed.

Economy in Use of Alcohol in Prescriptions

The General Medical Council has issued a fifth addendum to the British Pharmacopeia with the main object of economizing alcohol. The minister of health has accordingly issued a "scarce substances order" setting out approved alternatives when certain spirits and tinctures are prescribed. Physicians have the right to mark the new scarce substances with the letters "N. A.," meaning "No alternative to be dispensed," but as the Medical Research Council has agreed that the concentrated preparations of the fifth addendum, with a few other preparations included in this order, present substantially the same therapeutic activity as the original spirits and tinctures, the chief difference being less alcohol, it is hoped that prescribers will generally abstain from so marking prescriptions. The following are some of the scarce substances with the authorized alternative in parentheses: Spiritus Aetheris Nitrosi (a mixture of 1 volume of Liquor Aethylis Nitritis and 7 volumes of water); Spiritus Ammoniae Aromaticus (Liquor Ammoniae Aromaticus); Spiritus Menthae Piperitus (Emulsio Menthae Piperitae); Tinctura Belladonnae (a mixture of 1 volume of Extractum Belladonnae Liquidum and 24 volumes of water); Tinctura Colchici (a mixture of 1 volume of Extractum Colchici Liquidum and 9 volumes of water).

The Threat of Poison Gas

Mr. Churchill has warned Hitler that if he uses poison gas against the Russians our response will be gas attacks on military objectives in Germany. Precautions are being taken in view of the possibility of a gas attack on this country. The Ministry of Health has issued a circular pointing out that every one should get from the pharmacists the official bleach cream for application to splashes of blister gas on the skin. The two best known blister gases are oily liquids—mustard gas, which smells like onions or garlic, and lewisite, which smells like geraniums. Soap and water should be used to wash the whole body so as to remove any gas which may have reached the skin directly or through the clothes. All houses must be open to persons splashed who cannot get to decontamination stations, and soap and water must be provided for them. To prevent contamination of the house, visitors should be asked to take off their shoes and stockings and outer clothing before entering. If the eyes have been splashed, an eye bath should not be used but a gentle stream of warm water should be directed into each eye from a faucet or from a vessel with a spout. If this is not possible the eyes should be dipped in a bowl of warm water and opened and closed under water. If the hair is splashed, the affected part should be cut off and anti-gas ointment applied to the scalp.

No White Bread for Invalids

The abolition, as the result of war conditions, of that debased cereal food white bread has been described in previous letters. It has been suggested that a special white loaf should be available for invalids or persons suffering from stomach troubles, but the government will not agree to this, as Lord Horder has advised the Ministry of Food that wheatmeal bread is perfectly suitable for those who suffer from duodenal ulcers and similar complaints. Tests carried out at St. Bartholomew's Hospital showed that persons suffering from stomach troubles who had been fed on wholemeal bread thrived on it.

London University in Wartime

The report on the work of London University during the past year shows that in spite of financial and other difficulties due to the war it remains a valuable institution which is producing skilled men and women both for war work and for playing a useful part in reconstruction after victory. In 1938-1939 there were 14,587 internal and 10,893 external students. In 1940-1941 (the first complete war year) the figures were 8,916 and 8,840. The smaller diminution on the external side is explained by the fact that evacuation has not hit it as much as it has dislocated the collegiate side. Moreover, many serving members of the armed forces are pursuing courses of study as external students. The figures for 1941-1942 are not yet complete, but there appears to be a slight increase in both internal and external students. In the latter it is in faculties whose work is most directly related to the war effort—science and engineering—that numbers are best maintained.

Turning to students attending schools of the university, there is a sharp distinction between the medical and nonmedical schools. In 1940-1941 medical students were nearly 90 per cent of the number for 1938-1939, while nonmedical were only 56 per cent. Before the war 63 per cent of the students at nonmedical schools were men; now the proportion is only 50 per cent. In the medical schools the proportion of 90 per cent has scarcely changed. The main new problem during the year has arisen from the government's decision to call up women for national service, which has had an immediate effect on the position of women students.

The British Medical Students Association

The formation of the British Medical Students Association was described in THE JOURNAL, March 21. Further details are given in *University College Hospital Magazine*. University College Medical School has played a conspicuous part in the movement. For some years before the war there existed a Medical Faculty Subcommittee of the National Union of Students. It collapsed at the beginning of the war, but from the remains a "London Hospital Medical Committee," composed of the secretaries of the London Hospital Students Unions, was formed. This called a national conference of medical students, from which the British Medical Students Association arose. An interhospital debate was held at the house of the British Medical Association, at which the motion "That the Inadequacy of Medical Education Lies in the Curriculum" was carried by a majority of nearly two to one.

The British Medical Student Association at the beginning was supported by only a minority of the students. However, four or five enthusiasts and four to five thousand nominal members kept it going. Within a year it obtained a request from the medical planning commission of the British Medical Association for a memorandum on medical education. Some difficulty has arisen with the other hospitals because of the prominent part played by University College Hospital. It is therefore proposed that the British Medical Students Association should sever this connection and be established on an independent basis. It is proposed that it should cooperate with the National Union of Students in matters of general students'

interest but that it should make its views on medical matters known to the profession through the British Medical Association, which is prepared to serve as a medium for the exchange of views between medical students and the profession, to consult it on matters regarded as of special interest to medical students, to grant it, if required, secretarial facilities for the conduct of its business, and indirectly to insure a certain measure of continuity, which is essential to a student body but difficult to obtain.

A fact finding subcommittee of the British Medical Students Association has scheduled a list of objects: 1. To provide an organization whereby medical students can consult on matters of common interest, such as conditions of entry into the profession, the cost of medical education, the living conditions of students and safeguards for their health, the use of material in special hospitals, the examination systems and their cost, the pay of housemen, and other matters. 2. To provide a means of exchange of views between medical and other students. 3. Postwar problems. After the war the medical services may be drastically reorganized, and it will be in the interest of medical students to have an organization representing their views. 4. In future there may be a demand for physicians with administrative ability. The British Medical Students Association could provide valuable training in committee work and knowledge of the organization of medicine as a whole. 5. A panel of experts might be invited to give advice to the newly qualified on the prospects in special branches of medicine and further training. 6. Courses of lectures, both technical and general, visits to special clinics, travel abroad and exchange visits with other students, jobs in medicine during the vacation and publication of an interhospital magazine might be organized.

The Discovery of Symptomless Tuberculosis by Mass Radiography

The National Association for the Prevention of Tuberculosis has sent a manifesto to local health authorities reflecting the considered opinion of tuberculosis experts on the value of mass radiography in the early diagnosis of pulmonary tuberculosis. It is pointed out that the disease begins without any warning to the patient. By the time he voluntarily comes for treatment it is in an advanced stage. There are about a quarter of a million cases of pulmonary tuberculosis in the British Isles, of which about 1,500 are fatal each month between the ages of 15 and 50. To prevent the disease we must discover cases in the early stage before they have become infectious. Under war conditions the disease shows a tendency to increase, as it did in the last war. The only method of detection before symptoms are produced is by x-ray examination of the chest, which by modern methods can be carried out on large numbers of people at one time. The ideal would be for every young person to be examined on leaving school and at intervals during early adult life. Boys and girls in secondary schools, technical schools, colleges and universities are at a period of life when physical and mental strain is great and the risk of tuberculosis serious. At these age periods the disease shows a tendency to increase. Regular x-ray examinations are desirable. Under the factory acts the examining surgeons examine those who enter the industry under the age of 16. X-ray examination should be included. Finally, this course should be followed by commercial firms which have large staffs in their offices and factories.

Our existing tuberculosis services can normally deal with cases of the disease sent to them. These services have grown up almost entirely since the last war. But they deal only with those who have symptoms. An advance in the detection and prevention of tuberculosis is now needed by the examination advocated. Compulsory examination is foreign to our traditions of liberty and would fail, but the public can be educated to demand the examination in their own interest.

The Immunization of Nurses Against Diphtheria

It has been customary in isolation hospitals for many years to immunize nurses against diphtheria. Many women now commence nursing at an earlier age than heretofore, and a high proportion of nurses in general hospitals have been found Schick positive. The Ministry of Health has therefore sent to health officers directions as to how to extend immunization to susceptible nurses, especially those who work among children in hospitals and nurseries. For this purpose they recommend toxoid antitoxin floccules, as it tends to give rise to less reaction than alum precipitated toxoid. Three doses of 1 cc. should be injected at intervals of three weeks. Any subject reacting to the control toxin in the Schick test should not receive a first dose of more than 0.5 cc. If this causes a severe reaction the subsequent doses should be reduced to 0.5 cc. or less according to the severity of the reaction. Though a Schick negative reaction affords a strong presumption that under ordinary conditions the subject is unlikely to develop diphtheria, it does not exclude such a possibility in nurses and others exposed to the risk of infection. The Ministry of Health therefore considers that there is much to be said for the practice of giving all Schick negative nurses a single stimulating dose of 0.5 to 1 cc. of toxoid antitoxin floccules.

Sir Thomas Oliver

Sir Thomas Oliver, emeritus professor of medicine in the University of Durham and a leading authority on industrial hygiene, particularly lead poisoning, has died at the age of 89 years. He was in succession assistant pathologist to the Glasgow Royal Infirmary, lecturer in physiology and professor of medicine at the University of Durham. He served on government commissions of inquiry into industrial poisoning from various glazes used in the making of pottery, phosphorus poisoning and white lead poisoning. It was largely due to his recommendation that the government abolished female labor in the white lead industry. He showed that women were more liable to suffer than men, in the proportion of 4 to 1, and that miscarriage was a common result. He edited the valuable work "Dangerous Trades, Historical, Higher Aspects of Industrial Occuptions as Affecting Health." He also published the important work "Diseases of Occupation, from the Legislative, Social and Medical Points of View." This dealt with all the known dangerous trades—metals, gases, electric welding—and with fatigue, parasites and rescue in mines. This book filled a gap in medical literature and went through three editions. The employment of women in industry was a great anxiety to him. He was alarmed at the possible results on future generations of the strain on so many young women in munition work and other industries in the last war.

Marriages

NICHOLAS FREDERICK KRECKER VINCENT, East Orange, N. J., to Miss Joyce Hinkle at Camp Bowie, Texas, May 19.

SAMUEL EDWARD WARSHAUER to Miss Miriam Miller, both of Wilmington, N. C., at Alexandria, La., May 4.

GRADY MILTON COLSON, Goldsboro, N. C., to Miss Love Norris of Wilmington in Dillon, S. C., May 16.

LESTER R. WHITAKER, Portsmouth, N. H., to Miss Ruth L. Starbuck of White Plains, N. Y., May 2.

HENRY STOKES MUNROE JR. to Miss Martha Blanton Matthews, both of Charlotte, N. C., May 2.

CHARLES MATTOX KENDRICK, Valdese, N. C., to Miss Clara Josephine Payne of Lenoir, May 16.

CURTIS WEAL BOWMAN, Macon, Ga., to Miss Mary Louneal Williams in Atlanta, May 16.

VICTOR J. BIRNBERG, St. Paul, to Miss Bernis Nides of Hibbing, Minn., May 10.

Deaths

Milton Alexander Harrington, Vineyard Haven, Mass.; University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1910; member of the American Psychiatric Association, Association for Research in Nervous and Mental Disease and the American Psychopathological Association; for four years junior assistant physician at the Bloomingdale Hospital, White Plains, N. Y., and for two years senior assistant physician at the New York State Psychiatric Institute and Hospital, New York; attending specialist to Veterans Bureau Hospital 41; for many years psychiatrist for the New York State Department of Correction; formerly director of the department of psychiatry at the Institution for Male Defective Delinquents, Napanoch, N. Y.; served with the Royal Army Medical Corps in France during World War I; formerly consultant in mental hygiene at Dartmouth College, Hanover, N. H.; author of "Wish Hunting in the Unconscious, a Criticism of Psychoanalysis" and "The Biological Approach to the Problem of Human Behavior"; aged 58; died, May 27, of coronary thrombosis.

Francis Sedgwick Watson, South Dartmouth, Mass.; Harvard Medical School, Boston, 1879; member of the Massachusetts Medical Society, American Surgical Association New England Surgical Society and the American Urological Association; past president of the American Association of Genito-Urinary Surgeons and was honorary president of the International Urological Society; fellow of the American College of Surgeons; clinical instructor in genitourinary surgery from 1888 to 1893, assistant in clinical surgery from 1890 to 1894, assistant in genitourinary surgery 1893-1894, instructor in genitourinary surgery from 1894 to 1901 and lecturer on genitourinary surgery from 1901 to 1909 at his alma mater; formerly on the staffs of the Boston City, Children's and Carney hospitals and the Boston Dispensary; aged 88; died, May 5.

Henry Wallace Grote ✠ Bloomington, Ill.; Rush Medical College, Chicago, 1894; county physician of Du Page County, Ill., from 1898 to 1901; in 1921 founder and first president of the Central Illinois Radiological Society (now Illinois Radiological Society); charter member of the Radiological Society of North America; member of the American Roentgen Ray Society, International Congress of Radiology, American Congress of Internal Medicine and the American Association for the Study of Goitre; past president of the McLean County Medical Society; for many years director of the roentgen laboratory at Brokaw Hospital, Normal, Ill.; aged 72; died, June 20, of carcinoma of the prostate.

Henry Christian Galster ✠ Hudson, N. Y.; New York Homeopathic Medical College and Flower Hospital, New York, 1909; secretary of the Columbia County Medical Society; was decorated with the British Military Cross for services with the British Expeditionary Forces during World War I; bank president; formerly mayor of Hudson; attending ophthalmologist and otolaryngologist, Hudson City Hospital; consultant on the staffs of the Memorial Hospital of Greene County, Catskill, New York State Training School for Girls, Hudson, and the Columbia Sanatorium, Philmont; aged 54; died, June 8, of coronary occlusion.

Edward Raymond Ryan ✠ Milwaukee; Marquette University School of Medicine, Milwaukee, 1917; member of the American Academy of Ophthalmology and Otolaryngology; clinical instructor in ophthalmology at his alma mater; specialist certified by the American Board of Ophthalmology; served in the U. S. Navy during World War I; director of the eye clinic at the Milwaukee County Dispensary; aged 49; died, June 7, of coronary thrombosis.

George Washington Carr ✠ Englewood, N. J.; Jefferson Medical College of Philadelphia, 1895; member of the Medical Society of the State of Pennsylvania and the American Academy of Ophthalmology and Otolaryngology; for many years consulting ophthalmologist for the Lehigh Valley Railroad; formerly on the staffs of the Wilkes-Barre General Hospital and the Mercy Hospital, Wilkes-Barre, Pa.; aged 69; died, June 17, of heart disease.

George Lincoln McBride, Grand Rapids, Mich.; M.B., University of Toronto Faculty of Medicine, 1892, and M.D., Victoria University Medical Department, Coburg, Ont., Canada, 1892; at one time dean and professor of medicine at the Grand Rapids Medical College; formerly visiting surgeon on the staff of the Butterworth Hospital; aged 77; died, May 5, of coronary thrombosis.

George Pierson Jessup, Staten Island, N. Y.; College of Physicians and Surgeons, New York, 1890; member of the Medical Society of the State of New York; past president of the Richmond County Medical Society; aged 77; on the staffs of the Seaside Hospital and the Staten Island Hospital, where he died, May 18, of arteriosclerosis, heart disease and bronchopneumonia.

Reuben Thomas Johnston, Brooklyn; Boston University School of Medicine, 1903; member of the Medical Society of the State of New York; for many years president of the Eastern District Dispensary; on the staffs of the Prospect Heights Hospital, Brooklyn Nursery and Infants' Hospital and the Cumberland Hospital; aged 64; died, May 10, of coronary sclerosis.

Robert John Morrison, Brooklyn; Long Island College Hospital, Brooklyn, 1891; member of the Medical Society of the State of New York; fellow of the American College of Surgeons; on the visiting staff of the Caledonian Hospital; consulting surgeon, Brooklyn Eye and Ear Hospital; aged 85; died, June 8, of carcinoma of the tongue and cardiovascular disease.

John Lee Summerlin ✠ Gainesville, Fla.; Atlanta (Ga.) Medical College, 1916; member of the American Academy of Ophthalmology and Otolaryngology; specialist certified by the American Board of Otolaryngology; president of the Alachua County Medical Society; served during World War I; aged 52; died, May 31, of coronary thrombosis.

James Joseph Ryan, Buffalo; University of Buffalo School of Medicine, 1934; member of the Medical Society of the State of New York; formerly on the staffs of the J. N. Adam Memorial Hospital, Perrysburg, N. Y., and the Ideal Hospital, Endicott, N. Y.; aged 33; died, June 1, in the Millard Fillmore Hospital of cerebral hemorrhage.

Harry Andrew Shafor ✠ Los Angeles; Eclectic Medical Institute, Cincinnati, 1899; on the staff of the Santa Monica Hospital; formerly on the staff of the Grace Hospital, Detroit; chairman of the medical committee of the Bay Area Civilian Defense Board; served during World War I; aged 66; died, May 27, of heart disease.

Frank Burge Kimzey, Union City, Tenn.; Vanderbilt University School of Medicine, Nashville, 1926; member of the Tennessee State Medical Association; past president and secretary of the Obion County Medical Society; served during World War I; aged 41; died, May 15, of angina pectoris.

Charles Bernstein ✠ Rome, N. Y.; Albany Medical College, 1894; member of the American Psychiatric Association; past president of the American Association for the Study of Feebleminded; superintendent of the Rome State School; aged 69; died, June 13, of chronic interstitial nephritis.

William John Webster Woolgar ✠ Lyme, N. H.; Western Reserve University Medical Department, Cleveland, 1898; member of the Ohio State Medical Association; aged 78; died, May 29, of bronchopneumonia, congestive heart disease, arteriosclerosis and Raynaud's disease.

James Frederick Williams, Joliet, Ill.; Meharry Medical College, Nashville, Tenn., 1903; member of the Illinois State Medical Society; on the staffs of St. Joseph's and Silver Cross hospitals; aged 71; died, May 30, of coronary sclerosis, hypertension and chronic nephritis.

Alfred Walter Jones, Akron, Ohio; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1896; member of the Ohio State Medical Association; at one time secretary of the Summit County Medical Society; aged 70; died, May 19, of coronary thrombosis.

Joe Hartman Schantz, New Tripoli, Pa.; Temple University School of Medicine, Philadelphia, 1930; member of the Medical Society of the State of Pennsylvania; on the staff of the Allentown (Pa.) Hospital; aged 37; died, June 7, of a self-inflicted bullet wound.

Emil Bernard Anderson ✠ Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903; for many years on the staff of the Englewood Hospital; aged 65; died, June 2, of carcinoma of the bladder.

David Hill McCall, Otway, Ohio; University of Louisville (Ky.) Medical Department, 1917; served as a lieutenant commander in the U. S. Navy during World War I; aged 51; died, May 29, in the Mercy Hospital, Portsmouth, of myocardial failure.

George Mortimer Smith ✠ Hartford, Conn.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1907; assistant surgical director of the Travelers Insurance Company; aged 56; died, June 1, of coronary thrombosis.

Ira Clinton Tyndall, Berlin, Md.; Baltimore University School of Medicine, 1896; member of the Medical and Chirurgical Faculty of Maryland; served as a major in the medical corps of the U. S. Army during World War I; aged 68; died in May.

James Alfred Maguire, Boston; Tufts College Medical School, Boston, 1931; member of the Massachusetts Medical Society; assistant in medicine from 1935 to 1938 and since then instructor in medicine at his alma mater; aged 36; died, May 31.

Guy Howard Hutchins ✠ Auburn, Maine; Medical School of Maine, Portland, 1899; formerly district health officer for Kennebec and Somerset counties; aged 65; died, May 9, in the Central Maine General Hospital, Lewiston, of lobar pneumonia.

P. Henry O'Hara ✠ Dayton, Ohio; Eclectic Medical Institute, Cincinnati, 1907; at one time coroner of Preble County; aged 63; died, June 12, in the Reid Memorial Hospital, Richmond, Ind., of coronary thrombosis and arteriosclerosis.

William Lowder ✠ Maquoketa, Iowa; Medical College of Indiana, Indianapolis, 1894; past president and secretary of the Jackson County Medical Society; formerly county coroner; aged 76; died, June 3, of an injury received in a fall.

Eugene Ackerman ✠ Bethlehem, Pa.; Univerzita Komenského Fakulta Lékárska, Bratislava, Czechoslovakia, 1920; aged 48; on the courtesy staff of St. Luke's Hospital, where he died, June 8, of a tumor of the spinal cord.

Edgar Albert Frauer, Los Angeles; Bennett Medical College, Chicago, 1915; served during World War I; aged 52; died recently in the Veterans Administration Facility, Sawtelle, of gastric hemorrhage due to duodenal ulcer.

Tilden Hendricks Phipps Jr., Tampa, Fla.; University of Oklahoma School of Medicine, Oklahoma City, 1937; appointed a first lieutenant in the medical reserve corps of the U. S. Army March 5, 1941; while in Australia, where he arrived April 7, 1942, was transferred to the 38th Bombardment Group Medical Corps; aged 30; was killed in an airplane accident, June 5, in the Far Eastern theater of war.

Floyd Kinsolving, Hornersville, Mo.; University of Louisville (Ky.) Medical Department, 1888; member of the Missouri State Medical Association; aged 79; died, May 5, in the Presnell Hospital, Kennett, of chronic asthma.

Oliver Miller Heartsill, Marshall, Texas; Atlanta (Ga.) Medical College, 1882; University of Tennessee Medical Department, Nashville, 1886; member of the State Medical Association of Texas; aged 85; died, May 27.

Louis Koenig ✠ Brooklyn; Long Island College Hospital, Brooklyn, 1907; specialist certified by the American Board of Ophthalmology; on the staff of the Jewish Hospital; aged 58; died, May 30, of cirrhosis of the liver.

George Philip Naum, Cedar Grove, W. Va.; Ohio State University College of Medicine, Columbus, 1929; member of the West Virginia State Medical Association; aged 40; died, May 18, in a hospital at Charleston.

Charles E. Pearson ✠ Turlock, Calif.; Kentucky School of Medicine, Louisville, 1898; formerly health officer of Turlock; on the visiting staff of the Emanuel Hospital; aged 64; died, May 30, of coronary occlusion.

James Robert Craig, Ripley, Tenn.; University of Nashville Medical Department, 1893; Vanderbilt University School of Medicine, Nashville, 1893; aged 70; was found dead in bed, May 15, of cardiovascular disease.

Victor Emmannuel Kea, Atlanta, Ga.; Emory University School of Medicine, Atlanta, 1918; member of the Medical Association of Georgia; served in the U. S. Navy during World War I; aged 52; died, May 20.

Eugene Rison Timmons, Grand Junction, Tenn.; Birmingham Medical College, 1915; member of the Tennessee State Medical Association; aged 49; died, May 24, of a malignant condition of the pancreas.

Otis Manly Patterson, Bastrop, La.; Memphis (Tenn.) Hospital Medical College, 1887; for many years coroner and health officer of Morehouse Parish; aged 81; died, May 19, of influenza and pneumonia.

Stephen Sylvester Stack ✠ Milwaukee; Rush Medical College, Chicago, 1921; assistant professor of pathology at Marquette University School of Medicine; aged 46; died, May 26.

Charles P. Leininger, Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1904; aged 61; died, May 20, of carcinoma of the colon with metastasis to the liver.

Josiah C. Lloyd, Platte, S. D.; State University of Iowa College of Medicine, Iowa City, 1882; aged 87; died, May 25, in Mitchell of bronchopneumonia and myocarditis.

Chauncey A. Rood, Brocton, N. Y.; University of Buffalo School of Medicine, 1878; member of the Medical Society of the State of New York; aged 87; died, May 2.

Zachary Peck Fletcher, Ramsey, N. J.; New York Homeopathic Medical College and Hospital, New York, 1888; aged 79; died, May 22, of chronic myocarditis.

DIED IN ARMY SERVICE

TILDEN H. PHIPPS JR., M.D.
1911-1942

Emery Marcus Byers, Genoa, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1898; aged 70; died, May 22.

William George Walker, Houston, Texas; Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1902; aged 63; died, May 17, in a local hospital.

Benjamin Woloshin ✠ New York; Long Island College Hospital, Brooklyn, 1915; on the staff of the Bronx Hospital; aged 49; died, May 26, of carcinoma.

Emile Ostiguy, Montreal, Que., Canada; M.B., Victoria University Medical Department, Coburg, Ont., 1887, and M.D. in 1889; aged 75; died recently.

Edward E. Underwood, Frankfort, Ky.; Western Reserve University Medical Department, Cleveland, 1891; aged 77; died, May 31, of cardiorenal disease.

Irving Edwin Sauber, Wallingford, Conn.; George Washington University School of Medicine, Washington, D. C., 1927; aged 41; died, May 11.

Warren Bassett Klinetop, Charles City, Iowa; Hering Medical College, Chicago, 1895; aged 83; died, May 18, of cerebral hemorrhage.

Loren Hoover ✠ Decker, Ind.; Medical College of Indiana, Indianapolis, 1892; aged 74; died, May 29, in St. Mary's Hospital, Evansville.

Benjamin H. Harrison, Burlison, Tenn. (licensed in Tennessee in 1911); aged 69; died, May 14, of chronic valvular heart disease.

Frank Leroy Baker, Fayette, Iowa; Hahnemann Medical College and Hospital, Chicago, 1904; aged 65; died, May 28, of nephritis.

Lynn Murray Jones ✠ Dayton, Ohio; Ohio Medical University, Columbus, 1898; aged 71; died, May 3, of hepatic cirrhosis.

Joseph Patrick Armstrong, Ottawa, Ont., Canada; University of Toronto Faculty of Medicine, 1927; aged 40; died, April 4.

Augustus L. Craig, Chicago; Rush Medical College, Chicago, 1878; aged 88; died, May 25, of carcinoma of the prostate.

Charles E. Anderson, St. Louis; American Medical College, St. Louis, 1891; aged 83; died, May 23, of acute bronchitis.

George W. Alexander, Beachburg, Ont., Canada; Trinity Medical College, Toronto, 1899; died, April 6.

Richard Marion Murphey, Belleville, Ark. (licensed in Arkansas in 1903); aged 62; died, May 8.

John C. Stovall, Turin, Ga.; Atlanta Medical College, 1894; aged 72; died, April 23.

Bureau of Investigation

MISBRANDED PRODUCTS

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE.—These Notices of Judgment are issued under the Food, Drug and Cosmetic Act and in cases in which they refer to drugs and devices they are designated D. D. N. J. and foods, F. N. J. The abstracts that follow are given in the briefest possible form: (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the date of shipment, (4) the composition, (5) the type of nostrum, (6) the reason for the charge of misbranding and (7) the date of issuance of the Notice of Judgment—which is considerably later than the date of the seizure of the product and somewhat later than the conclusion of the case by the Food and Drug Administration.]

Alpine Tea.—Alpine Tea Company, Detroit. Sept. 2, 1939. Composition: cut dried leaves of blueberry. Misbranded because label falsely represented that the product would balance the deficiency of body minerals, stimulate the pancreatic glands, kidneys, bladder and liver, increase vitality amazingly and almost immediately, help one get a good night's rest, serve as an effective aid to the diabetic person's diet and lessen the need for insulin. Further misbranded becau the numerous mineral salts named, with their respective alleged amounts, on the label, did not represent an analysis of the product itself.—[*D. D. N. J., F. D. C. 358; March 1942.*]

Ancestral Oil.—Ancestral Medicine Company, Osawatomie, Kan. April 26, 1940. Composition: essentially a fish oil and turpentine. Misbranded because, among other things, falsely represented on label to be an effective treatment of hemorrhoids, rheumatism, hay fever, asthma, kidney ailments, tuberculosis, pneumonia and many other disorders. Further misbranded because label did not accurately state the quantities of the ingredients or give their common names.—[*D. D. N. J., F. D. C. 359; March 1942.*]

Blessed Herb Tea.—"Dr." Lyncha A. Johnson, Memphis, Tenn. Between Jan. 4 and Jan. 16, 1940. Composition: essentially plant material including couch grass, calamus and mistletoe. Misbranded because of false representation on label that it was a remedy for Bright's disease, bloody and scalding urine and stricture.—[*D. D. N. J., F. D. C. 369; March 1942.*]

Colicramp Drops.—A. G. Groblewski & Company, Plymouth, Pa. Sept. 6, 1940. Composition: essentially alcohol, ether and small amounts of peppermint, ammonia, ginger and plant extracts. Misbranded because falsely labeled to relieve pains of stomach gas, bloated feeling after eating and pains peculiar to women.—[*D. D. N. J., F. D. C. 379; March 1942.*]

Colusa Natural Oil.—C. W. Colgrove, Hollywood, Calif. May 21, 1940. Composition: crude petroleum oil. Falsely represented on labels as an effective treatment of athlete's foot, ringworm, eczema, psoriasis, acne, poison oak, burns and cuts.—[*D. D. N. J., F. D. C. 380; March 1942.*] A similar action against a shipment of Colusa Natural Oil by the Swan Manufacturing Company, San Francisco, was described under *D. D. N. J., F. D. C. 381; March 1942.*

Compound Herb Tea.—"Dr." Lyncha A. Johnson, Memphis, Tenn. Between Jan. 4 and Jan. 16, 1940. Composition: plant material such as rosemary, sassafras, chicory, red clover, senna and green leaves resembling eupatorium. Misbranded because label falsely represented it as efficacious for treating gonorrhea and leucorrhea.—[*D. D. N. J., F. D. C. 369; March 1942.*]

Double Quick Liver Tablets.—"Dr." Lyncha A. Johnson, Memphis, Tenn. Between Jan. 4 and Jan. 16, 1940. Composition: calomel and plant materials including ginger, senna, aloe, podophyllum and buckthorn. Misbranded because labels did not declare all active ingredients, particularly the calomel, and falsely represented product as exerting quick and strong action on the liver.—[*D. D. N. J., F. D. C. 369; March 1942.*]

Durets.—James Lawrence Company, Inc., New York. May 25, 1940. Composition: in each tablet, theophylline, ½ grain, methenamine, 1 grain, sodium biphosphate, 2.3 grains, and starch. Misbranded because label falsely represented the product to help drive out poisonous body wastes, relieve loss of sleep, help purify the urinary passages and be efficacious in treating backache, headache, mental depression, kidney and bladder disorders, pains in the groin, rheumatic muscular pains or joint aches due to chronic prostatitis.—[*D. D. N. J., F. D. C. 382; March 1942.*]

Edwenil.—Spicer & Company, Glendale, Calif. Between Feb. 21 and April 2, 1940. Composition: a colorless liquid containing about 1 per cent of solids, chiefly sodium chloride, with silicates and phosphates, nitrogenous matter and water. Adulterated and misbranded because represented to possess a strength and quality sufficient to activate and fortify the natural defenses of the body against acute and chronic endotoxic infections when administered in specified doses.—[*D. D. N. J., F. D. C. 360; March 1942.*]

Herb Wash.—"Dr." Lyncha A. Johnson, Memphis, Tenn. Between Jan. 4 and Jan. 16, 1940. Composition: essentially ground oak bark. False representation on label that the nostrum was effective in treating female disorders, gonorrhea and falling of the womb constituted misbranding.—[*D. D. N. J., F. D. C. 369; March 1942.*]

Heron's Pure Eucalyptus Oil.—Norman C. Heron, trading as N. C. Heron Company, Los Angeles. Nov. 23, 1939. Adulterated because it contained not more than 68 per cent of eucalyptol, whereas the United States Pharmacopeia provides that eucalyptus oil shall contain not less than 70 per cent of eucalyptus, and because the difference between the two in strength, quality and purity was not plainly stated on the label. Misbranded because label falsely represented the product as a pure eucalyptus oil, as an all-around family remedy and as effective for internal or external use from the youngest to the oldest; that the article, when used alone or in connection with "Heron's Liver Regulator" has no equal in treating Bright's disease and diabetes, whooping cough, diphtheria, pleurisy, pneumonia, fever, stomach and kidney disorders and many other things. This case was the subject of a criminal prosecution and the jury declared the defendant guilty. The court imposed a fine of $300, suspended a prison sentence and placed the defendant on probation.—[*D. D. N. J., F. D. C. 345; March 1942.*]

Hunt's (Dr.) Cervical Spine Relaxer.—Albert Thurlow Hunt, Los Angeles. Jan. 3, 1940. Device consisted of a sling fitting under the chin and around back of neck and riveted to a horizontal bar, operated from a block and tackle, which were manipulated to cause a stretching of operator's neck. Misbranded because statements and designs in accompanying circular falsely represented the device as practically a cure-all.—[*D. D. N. J., F. D. C. 372; March 1942.*] A Post Office fraud order debarring this mechanism from the mails was reviewed in THE JOURNAL, Dec. 27, 1941, page 2269.

Kru-Lax.—Oriental Laboratory, St. Louis. May 22, 1940. Composition: epsom salt, sulfur and plant material including licorice, anise and buchu. Charge of misbranding was based on false label representation that the product was an oriental herbal compound which would relieve constipation and hence obviate a good many other disorders such as heartburn, arthritis, sciatica, lumbago, gout, prostate trouble, female weakness, tape worm, appendicitis and tuberculosis.—[*D. D. N. J., F. D. C. 384; March 1942.*]

Marie de Medicis Scalp Food.—Marie de Medicis Products Company, Philadelphia. Sept. 30, 1940. Composition: a perfumed brown ointment containing free sulfur, hydrous wool fat and petrolatum. Misbranded because labels falsely represented that it would make the hair beautiful and healthy, nourish the scalp, and be an effective treatment for dandruff, falling hair and various scalp ailments, and because labels did not list the common name of each active ingredient.—[*D. D. N. J., F. D. C. 364; March 1942.*]

Natural Mineral Extracts.—Colonial Drug Company, Tulsa, Okla. Feb. 13, 1940. Composition: essentially ferric sulfate and water with small amounts of aluminum, calcium and magnesium compounds. Falsely represented on label to maintain mineral balance, "give new life" and overcome infections and a long list of disorders such as those of the skin, kidneys, bladder, rectum and female organs.—[*D. D. N. J., F. D. C. 385; March 1942.*]

Natural Ray Mineral Water.—Natural Ray Mineral Water Company, St. Louis. Aug. 11, 1939. Composition: a slightly alkaline water whose scant mineral content consisted chiefly of calcium bicarbonate, calcium sulfate and magnesium sulfate. Misbranded because falsely represented on label as an effective treatment of rheumatism, uric acid and kidney disorders.—[*D. D. N. J., F. D. C. 386; March 1942.*]

Naturzelp.—Nutro Distributing Association, Columbiana, Ohio. Jan. 1, 1940. Composition: essentially epsom salt, sodium salicylate and plant extracts including licorice. Label falsely represented it as a general purifier acting directly on the liver and relieving "rheumatism, arthritis, neuritis, lumbago" besides being a tonic for various organs and removing the sugar from the urine, thus eliminating the symptoms of diabetes.—[*D. D. N. J., F. D. C. 387; March 1942.*]

Noe's Graduated Xercisors and Massagers.—Roy H. Noe, Memphis, Tenn. May 22, 1940. Composition: two rubber belts, one equipped with handles, accompanied by an instruction book and a circular. Falsely represented in the labeling to be the fastest waistline reducing exercise known, to build health, eliminate constipation and prove efficacious for massaging the pelvic organs, keeping the prostate gland normal, correcting gland trouble, strengthening the eyes and doing a good many other things.—[*D. D. N. J., F. D. C. 395; March 1942.*]

Par-A-Pac Reducing Pack.—Par-A-Pac Company, New York. May 21, 1940. Composition: belts or pads consisting of layers of parchment, flannel and rayon. False representations that "reducing pack" was efficacious for spot reducing, eliminating excess flesh on the waistline, abdomen, hips, thighs, legs, arms or shoulders, oxidizing superfluous fatty tissues and slenderizing without dieting or exercise and that heating pad would relieve chest colds, lumbago, arthritis, backache and muscular soreness.—[*D. D. N. J., F. D. C. 396; March 1942.*]

Vitawine.—Interstate Laboratories, Inc., Louisville, Ky. April 3, 1940. Composition: in each fluid ounce, iron and ammonium citrate, 15.56 grains, manganese citrate, 0.63 grain, sodium citrate, 5.23 grains and alcohol 14.48 per cent. Biological examination showed that it contained 500 international units of vitamin B_1 per fluid ounce. Misbranded because label falsely represented that the product would assist in renewing health, restoring energy, enriching the blood, increasing metabolism and promoting normal growth; that it contained blood and body building ingredients, was indicated in any form of anemia, was a health tonic and would help prevent pellagra, inflammation of the skin, diarrhea, mental and physical nervousness and certain types of neuritis and other things.—[*D. D. N. J., F. D. C. 394; March 1942.*]

Correspondence

REQUESTS FOR REPRINTS

To the Editor:—I fully support the statements made by Dr. Richard Kovacs in his recent communication in THE JOURNAL. Very few physicians who ask for reprints enclose a stamped envelop with their request. However, there is an additional and more flagrant lack of courtesy. Many physicians write to ask for information on how to treat patients and data for papers they intend to write. My impression is that less than one in ten takes the trouble to thank us for the advice and information we give, even when we specifically ask to be told of the results of therapy we recommend. It seems to me that the least physicians can do is to say "thank you" for the time we spend thinking about their problems and preparing an answer.

J. P. GREENHILL, M.D., Chicago.

To the Editor:—On page 828 of the July 4 issue, Dr. Richard Kovacs condemns the practice of certain persons using a penny postcard to request a reprint. He believes that any one requesting a reprint of an author should write a personal letter and enclose postage.

I am not in accordance with his belief for the following reasons: I use my own funds to send out approximately eight hundred reprints of each of the articles I write, with the full knowledge that 90 per cent or more of these will receive no better than a casual glance before reaching the scrap basket; therefore, I feel that I can perfectly well afford to send reprints at my own expense to those who request them even by postcard.

Though no mention is made in Dr. Kovacs's letter of acknowledging reprints, it is my belief that an acknowledgment is not required unless one or more of the following conditions prevail:

1. If the reprint is of genuine interest to the recipient.
2. If the author is a close friend.
3. If the author is a young doctor who has done a good piece of work and deserves encouragement.

ROBERT B. TAFT, M.D., Charleston, S. C.

To the Editor:—In THE JOURNAL, July 4, appears a short scathing discourse by Richard Kovacs, M.D., concerning penny postcard requests for reprints. Dr. Kovacs condemns this procedure and titles it as a "reprint racket."

According to his notations I suppose I should classify myself as one of the "penny postcard reprint racketeers"! Before doing this I wish to broach a few points in the defense of us "racketeers."

1. Use of the penny postcard affords a tremendous saving in paper, secretarial time and physician's time. All three are vital in these days, when a physician's time is more crowded than ever because of the shortage created by the war.

2. The physicians who request reprints are usually the ones who write scientific articles. They in turn spend funds for purchase of reprints and postage to supply requests for reprints. Therefore the outlay averages up in the long run.

3. The few dollars spent in distributing reprints for the edification of colleagues certainly will not break or even dent the purse of the physician author.

4. One doesn't request a reprint if one isn't especially interested in the subject with which the paper deals.

5. The average busy physician runs across titles of papers he would enjoy reading only at odd moments. These are found chiefly in the summaries and indexes of the Current Medical Literature printed in each issue of THE JOURNAL. Because of this I, as well as many of my physician friends who do not have access to a large medical library of periodicals make a habit of having penny postcards handy. We jot down requests for reprints at once and soon have the article at hand. Frequently, postponing the request until one arrives at the office the following day causes neglect in writing for the reprint. Daily duties occupy the physician's mind, and the desire for the reprint is not recalled until a leisure moment at home again, and so on ad infinitum.

I for one feel greatly honored when requested for a reprint—maybe it is due to the particular type of ego I possess.

STANLEY H. MACHT, M.D., Crewe, Va.

CONSTITUTIONAL INADEQUACY OR NEURASTHENIA

To the Editor:—That was a fascinating article by Dr. Walter C. Alvarez in the July 4 issue. He always writes well and interestingly. Of course, all of us old practitioners recognized the class of patients to which the doctor chooses to apply a new label—constitutional inadequacy. Yes, we are all acquainted with that class of chronics who wander from office to office, from clinic to clinic, and finally wind up with some quack or fall a prey to some patent nostrum.

It is with the new name, however, that I wish to take issue with the author. The label seems a bit vague, too long, too hackneyed. If we can only find a simple label, of one word or of two words joined together for euphony!

I didn't have to go far. Under the heading of the Cause of the Trouble, Dr. Alvarez states "Actually, in most cases I feel sure the primary constitutional weakness is in the nervous system." Ah! I have it. Weakness and nervous system. Weak nerves—neurasthenia. What a discovery! And what a simple label. What you say, neurasthenia, that's an old name. Well, old or new, it fits it like a glove.

SAMUEL RALPH, M.D., Brooklyn.

CARDIAC FAILURE AND RHYTHM OF THE HEART

To the Editor:—A brief note appearing in Tonics and Sedatives in THE JOURNAL, May 30, was entitled "Get Together Boys" (contributed by a "Colleague"). The contradiction which this title called attention to does have a serious as well as a more humorous aspect, and it is because of the former that we wish to publish this explanatory note. The contradiction referred to occurred in volume 4 of the *New International Clinics* (1941). On page 4 Keefer states that "the vast majority of patients with heart failure regardless of its cause show a normal cardiac rhythm." On page 165 of the same volume, Hallock, Larson and Watson state that "it is generally agreed that the majority of cases of cardiac failure are accompanied by auricular fibrillation." This statement was based on the statistics of Mackenzie (1913) and Lewis (1937) with respect, however, to severe congestive heart failure. In writing this sentence we were not thinking of the cases of early left ventricular failure presenting with dyspnea alone and without the signs of right heart failure, which are usually associated with the term "congestive failure." Of course, the statement we made was incorrect in the broad sense because we did not specify congestive heart failure. We freely admit this error and wish to take this opportunity of correcting it and, further, of thanking the colleague who called the matter to our attention.

PHILLIP HALLOCK, M.D.
E. A. LARSON, M.D.
C. J. WATSON, M.D.
Minneapolis.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

CHICAGO, Feb. 15-16, 1943. Sec., Council on Medical Education and Hospitals, Dr. H. G. Weiskotten, 535 North Dearborn Street, Chicago.

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL, July 25, page 1050.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Montgomery, June 15-16. Sec., Dr. B. F. Austin, 519 Dexter Ave., Montgomery.

ARKANSAS: * *Medical.* Little Rock, Nov. 5-6. Sec., Dr. D. L. Owens, Harrison. *Eclectic.* Little Rock, Nov. 5. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Written.* Sacramento, Oct. 19-22. *Oral examination* (required when reciprocity application is based on a state certificate or license issued ten or more years before filing application in California), Los Angeles, Sept. 16. Sec., Dr. Charles B. Pinkham, 1020 N St., Sacramento.

DISTRICT OF COLUMBIA: * Washington, Nov. 9-10. Sec., Commission on Licensure, Dr. George C. Ruhland, 6150 East Municipal Bldg., Washington.

FLORIDA: * Jacksonville, Nov. 23-24. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, Oct. 13-14. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta.

ILLINOIS: Chicago, Oct. 13-15. Superintendent of Registration, Mr. Philip M. Harman, Department of Registration and Education, Springfield.

INDIANA: Indianapolis, Jan. 13-15. Sec., Board of Medical Registration and Examination, Dr. W. C. Moore, 301 State House, Indianapolis.

KANSAS: Kansas City, Sept. 15-16. Sec., Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 N. Seventh St., Kansas City.

MARYLAND: *Medical.* Baltimore, Dec. 8-11. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Homeopathic.* Baltimore, Dec. 8-9. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MICHIGAN: * Lansing, Oct. 14-16. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 203 Hollister Bldg., Lansing.

MINNESOTA: * Minneapolis, Oct. 20-22. Sec., Dr. Julian F. Du Bois, 230 Lowry Medical Arts Bldg., St. Paul.

MISSISSIPPI: Jackson, December. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MISSOURI: Kansas City, Oct. 3. Sec., State Board of Health, Dr. James Stewart, State Capitol Bldg., Jefferson City.

MONTANA: Helena, Oct. 6. Sec., Dr. Otto G. Klein, First National Bank Bldg., Helena.

NEVADA: *Reciprocity.* Carson City, Aug. 3. Sec., Dr. Frederick M. Anderson, 215 N. Carson St., Carson City.

NEW HAMPSHIRE: Concord, Sept. 10-11. Sec., Board of Registration in Medicine, Dr. T. P. Burroughs, State House, Concord.

NEW JERSEY: Trenton, Oct. 20-21. Sec., Dr. Earl S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: * Santa Fe, Oct. 13-14. Sec., Dr. LeGrand Ward, 135 Sena Plaza, Santa Fe.

NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 14-17. Chief, Bureau of Professional Examinations, Mr. H. L. Field, State Education Department, 315 Education Bldg., Albany.

NORTH CAROLINA: December. Sec., Dr. W. D. James, Hamlet.

OHIO: *Endorsement.* Oct. 6. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: * Oklahoma City, Dec. 9. Sec., Dr. J. D. Osborn, Jr., Frederick.

TEXAS: Austin, Dec. 28-30. Sec., Dr. T. J. Crowe, 918-20 Texas Bank Bldg., Dallas.

UTAH: Salt Lake City, June. Dir., Department of Registration, Mr. G. V. Billings, 324 State Capitol Bldg., Salt Lake City.

VIRGINIA: Richmond, Dec. 8-11. Sec., Dr. J. W. Preston, 30½ Franklin Rd., Roanoke.

WASHINGTON: * Seattle, Aug. 3-5. Dir., Department of Licenses, Mr. Thomas Swayze, Olympia.

WISCONSIN: * *Reciprocity.* Madison, September. Sec., D. H. W. Shutter, 425 E. Wisconsin Ave., Milwaukee.

WYOMING: Cheyenne, Oct. 5-6. Sec., Dr. M. C. Keith, Capitol Bldg., Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARIZONA: Tucson, Sept. 15. Act. Sec., Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson.

CONNECTICUT: Oct. 10. Address State Board of Healing Arts, 1945 Yale Station, New Haven.

DISTRICT OF COLUMBIA: Washington, Oct. 19-20. Sec., Commission on Licensure, Dr. George C. Ruhland, 6150 East Municipal Bldg., Washington.

FLORIDA: Gainesville, Oct. 31. Application must be on file not later than Oct. 16. Sec., Dr. J. F. Conn, John B. Stetson University, DeLand.

MINNESOTA: Minneapolis, Oct. 6-7. Sec., Dr. J. C. McKinley, 126 Millard Hall, University of Minnesota, Minneapolis.

NEBRASKA. Lincoln, Oct. 6-7. Dir., Bureau of Examining Boards, Mrs. Jeannette Crawford, 1009 State Capitol Bldg., Lincoln.

NEW MEXICO: Albuquerque, Feb. 1. Sec., Miss Pia Joerger, State Capitol, Santa Fe.

OKLAHOMA: Oklahoma City, May, 1943. Sec., Dr. Oscar C. Newman, Shattuck.

OREGON: Portland, Oct. 31. Sec., State Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene.

RHODE ISLAND: Providence, Aug. 19. Chief, Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: Sioux Falls, Dec. 4-5. Sec., Dr. G. M. Evans, Yankton.

WISCONSIN: Madison, Sept. 19. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

District of Columbia May Report

The District of Columbia Board of Examiners in Medicine and Osteopathy reports the written examination for medical licensure held at Washington, May 11-12, 1942. The examination covered 9 subjects and included 60 questions. An average of 75 per cent was required to pass. Nineteen candidates were examined, all of whom passed. Six physicians were licensed to practice medicine on endorsement of credentials of the National Board of Medical Examiners. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
George Washington University School of Medicine		(1940), (1941, 10)*	11
Georgetown University School of Medicine		(1941, 2)*	2
Indiana University School of Medicine		(1938)	1
Temple University School of Medicine		(1933)	1
University of Pennsylvania School of Medicine		(1940)	1
Medical College of Virginia		(1936)	1
University of Toronto Faculty of Medicine		(1924)	1
Osteopath †			1

School	LICENSED BY ENDORSEMENT	Year Grad.
George Washington University School of Medicine		(1938)
Georgetown University School of Medicine		(1940)
New York Medical College, Flower and Fifth Avenue Hospital		(1940)
New York University College of Medicine		(1939)
University of Pennsylvania School of Medicine		(1930)
McGill University Faculty of Medicine		(1935)

* Licenses have not been issued.
† Examined in surgery only.

West Virginia March Report

The Public Health Council of West Virginia reports the oral and written examination for medical licensure held at Charleston, March 2-4, 1942. The examination covered 11 subjects and included 110 questions. An average of 80 per cent was required to pass. Four candidates were examined, all of whom passed. Eleven physicians were licensed to practice medicine by reciprocity. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
George Washington University School of Medicine		(1939)	1
Western Reserve University School of Medicine		(1916)	1
Hahnemann Medical College and Hospital of Philadelphia		(1940)	1
Meharry Medical College		(1940)	1

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
George Washington University School of Medicine		(1939)	Vermont
Rush Medical College		(1933)	Penna.
University of Maryland School of Medicine and College of Physicians and Surgeons		(1940)	Maryland
Tufts College Medical School		(1933)	Kentucky
Ohio State University College of Medicine		(1937), (1940)	Ohio
University of Cincinnati College of Medicine		(1935)	Ohio
University of Tennessee College of Medicine		(1925)	Tennessee
University of Vermont College of Medicine		(1933)	Vermont
Medical College of Virginia		(1929)	N. Carolina
University of Virginia Department of Medicine		(1932)	Virginia

Massachusetts Endorsement Report

The Massachusetts Board of Registration in Medicine reports 30 physicians licensed to practice medicine on endorsement of credentials of the National Board of Medical Examiners from Jan. 6 through Feb. 27, 1942. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Grad.	Number Endorsed
Yale University School of Medicine		(1934), (1937), (1938)	3
Georgetown University School of Medicine		(1940)	1
Boston University School of Medicine		(1939, 2), (1940, 4)	6
Harvard Medical School		(1937), (1938, 2), (1939)	4
Tufts College Medical School		(1934), (1937), (1938), (1939, 5), (1940, 4)	12
New York University College of Medicine		(1938)	1
Duke University School of Medicine		(1936)	1
Woman's Medical College of Pennsylvania		(1940)	1
McGill University Faculty of Medicine		(1938)	1

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Hospitals: Liability for Death of Mentally Depressed Patient; Practice of Medicine by Hospitals.—The administratrix of the estate of the deceased patient sued the defendant sanatorium, the defendant physician and another for damages because of the patient's death. At the close of the plaintiff's evidence, the defendants moved the court for a directed verdict, which motion was sustained, and the jury was instructed to and did return a verdict for all the defendants. The plaintiff then appealed to the Appellate Court of Indiana, in banc. After the filing of the plaintiff's brief, the action against the defendant physician was dismissed.

The evidence showed that the patient was taken to the defendant sanatorium because he was suffering from mental depression and had twice attempted to commit suicide. When he arrived at the institution he was examined by the defendant physician, who was a resident physician at the sanatorium but who also engaged in the private practice of neurology and psychiatry. Arrangements were made for the constant guarding of the patient, and his attendant, who was on twenty-one hour duty, was informed that the patient had suicidal tendencies and that he must watch him closely. Several days after admission, at the direction of the head nurse of the sanatorium, the attendant took the patient to an office building for the purpose of having roentgenograms made. The office to which the patient was taken was located on the seventh floor of the building. While in that office, the patient suddenly jumped through a large open window and fell to the sidewalk below, the fall causing his death.

The defendant sanatorium was a private corporation operating for profit, and such a corporation, the court said, is liable in damages for injuries to its patients proximately resulting from the negligence of its officers or employees while performing administrative or ministerial acts. While a hospital or sanatorium conducted for private gain is not an insurer of its patients against self-inflicted injuries, it is required to use ordinary care. In determining what constitutes ordinary care in such cases it is proper to consider the physical and mental ailments of the patient which may affect his ability to look after his own safety. The attending physician in this case testified that the patient was his private patient, and the court thought that the evidence justified the conclusion that the patient was under the charge of this physician as an independent contractor for diagnosis and treatment of his mental condition but that he was under the charge of the sanatorium for care, protection and the customary hospitalization of an institution which treats mental and nervous disorders. The plaintiff contended that, since the physician gave an order to the head nurse of the sanatorium that the patient be taken to the office building for roentgenograms, the protection and guarding of the patient while he was in the office building and the act of the head nurse of the hospital in directing that he be taken to such a place under the charge of one attendant were all medical acts connected with the treatment of the patient by the physician and that the sanatorium or its attendant could not be liable for any negligence in the performance thereof.

When a physician, the court said, is in charge of all the medical or surgical work carried on at a hospital or sanatorium and gives orders or directions concerning the treatment of patients, it is difficult to determine when the acts of the employees of the hospital or sanatorium are medical acts assisting the physician in the treatment of his patient or administrative or ministerial acts of the hospital itself in carrying out its contract with the patient. In Indiana, the court continued, where a sanatorium or hospital has no right to engage in the practice of medicine and where physicians although employed by it cannot engage in the practice of medicine as its agents, it is apparent that many anomalous situations will arise if the customary and routine acts of the hospital employees are designated as medical acts instead of administrative or ministerial acts of the hospital or sanatorium. A private hospital or sanatorium operated for profit and holding itself out to the public as equipped to furnish hospital service should be liable, in the opinion of the court, for the negligent acts of its employees who are acting under its supervision and control in the performance of their routine duties. If the negligence resulting in injury to a patient was in fact that of an independent physician, the hospital in which the patient was treated is not and should not be liable. In determining whether the negligence was the negligence of the hospital or sanatorium or of the physician who was treating the patient, the nature of the act performed and whether it was performed by a servant of the hospital or sanatorium or a servant of the physician should be of value in reaching a correct determination. A direction to have a roentgenogram made, the court continued, is not a medical act that would cause the person giving the order to be guilty of the offense of practicing medicine without a license. The guarding and protecting of patients suffering from mental disease is not a medical act, and it is not necessary to have a license to practice medicine to perform such acts. The fact that a physician directs or orders such an act does not make it a medical act. The physician in this case was an administrative officer of the sanatorium as well as engaged in the practice of medicine. The court could see no reason why he, as an officer of the sanatorium, could not direct the performance of routine duties by its employees, and the fact that he was a physician or that the duties were connected with the care of his private patient would not necessarily make the acts of the employees medical acts.

In conclusion, the court said that the evidence was such that the minds of reasonable men could differ as to whether under all conditions and circumstances it was negligent to send the patient to the office building with only one guard, especially when there were a number of open windows in the office building and when conditions were such that the patient might be injured in attempting to escape. Also, the minds of reasonable persons could differ as to whether the attendant and his employer took proper precautions for guarding the patient while he was in the office building. The trial court, in the opinion of the Appellate Court, erred in taking the case from the jury at the close of the plaintiff's evidence and in directing a verdict for the defendants. The judgment was therefore reversed, with direction to the trial court to sustain the motion for a new trial against the sanatorium and the attendant.—*Fowler v. Norways Sanitorium, 42 N. E. (2d) 415 (Ind., 1942).*

Malpractice: Production of Hospital Records Relating to Medical Treatment Required for Patient's Inspection.—One Garrett brought an action in the Iowa courts for damages against the defendant clinic and the defendant physicians for malpractice. Subsequently, the trial court, by virtue of an Iowa statute which authorizes a trial court to require the production of any books or papers which are material to the just determination of any cause pending before it in which books or papers are under the control of the party against whom the rule is sought, entered a rule requiring a certain hospital wherein the defendants had treated the plaintiff to produce the charts and records relating to their treatment of the plaintiff in the hospital. The defendants sought by appropriate action in the Supreme Court of Iowa to test the legality of the rule.

Whether a rule for the production, said the Supreme Court, of hospital records will be entered rests in the sound legal discretion of the trial court. The statute providing for the production of books and papers in this connection is remedial and should be liberally construed. The physician defendants do not seriously claim that the hospital records and charts are not material competent evidence for the plaintiff patient. They contend, however, that the patient's request for the production of those records and charts is in effect a roving commission to ransack the entire files of the defendant physicians and of the

hospital in question to determine whether or not the patient has a cause of action or to discover the defense of the physicians in the malpractice suit. It is quite manifest, however, that the plaintiff was not merely engaged in a fishing expedition in that the hospital records and charts will show the orders of the defendant physicians given in their medical treatment of the patient and what was done pursuant to the orders by the hospital staff and will tend to prove acts of commission or omission by the physicians during the time the relation of physician and patient existed. It is well settled that the fact that the documents may be evidence for the patient will not defeat the patient's right to their production if they tend to prove his cause of action.

The physicians next contended that the trial court erred in granting the inspection of the hospital records and charts because the hospital was not a party to the malpractice suit and the records and charts were in the possession and control of the hospital. We are satisfied, answered the court, however, that the trial court was right in deciding that the charts and records pertaining to the patient were under the control of the defendant physicians. The records show that the physicians were entitled to possession of the records pertaining to the patient's case from the hospital on request and that the hospital would not release or deliver them to third parties without the consent of the physicians. Actual possession of books and papers is not necessary. It is sufficient that those books and papers are under the control of the parties against whom the rule for production is sought. Since it satisfactorily appeared to the court that there was competent evidence in the control of the physician's material and necessary to the patient's action, the Supreme Court concluded that the trial court had not erred in entering the rule requiring the production of the hospital records and charts.—*Hampton Clinic v. District Court of Franklin County, 300 N. W. 646 (Iowa, 1941).*

Accident Insurance: Death Following Unintended Intravenous Injection of Arsenical Compound by Physician as Due to "External, Violent, and Accidental Means."—The defendant insurance company issued a policy providing certain benefits if the insured should die from "bodily injuries effected . . . directly and independent of all other causes and solely through external violent and accidental means." The insured was treated by a physician for a severe cold or bronchitis. Shortly after his recovery from that ailment his physician, for just what purpose the case does not make clear, while intending to give him an intravenous injection of "a nonpoisonous drug," through inadvertence injected an arsenical compound, resulting, according to the reported case, in instant death. When the beneficiary brought suit on the policy, the insurance company denied liability. The trial court, in effect, dismissed the suit and the beneficiary appealed to the court of appeals of Ohio, Cuyahoga County.

The insurance company contended that death had not been caused by external, violent and accidental means, within the meaning of the policy because, first, the force causing death was not an external force and, second, the drug was administered by the physician in his professional capacity in attempting to treat the insured, and therefore the taking of such poison under the circumstances was voluntary on the assured's part and did not come about by accident. Thus, the insurance company claimed, there was an accident involved in the facts stated, such accident concerned the death itself and not the cause which brought about the death. As to the first question, answered the appellate court, the courts have, without deviation, held that death caused by the administering of poison into the system of a human being is in fact a death caused by the use of external violence and force. Although there are no cases in Ohio directly in point, a close analogy is found in *United States Mutual Accident Ass'n* v. *Hubbell,* 56 Ohio St. 516, 47 N. E. 544, which held that death caused by accidental drowning is death "through external, violent, and accidental means," within the meaning of a policy similar to the one here involved. Perhaps an analogy coming even closer to the facts in this case are cases in which death is caused directly and independently of all other causes by the inhalation of poisonous gas, in which case, according to *5 Couch on Insurance,* 4038, section 1150:

> Death or injury by the inhalation of poisonous or irrespirable gases, without design, intent, or expectation on the part of the insured—that is, through accident—is by external, violent, and accidental means, since the gas is external, the result is unnatural, and the cause is violent.

It seemed to the court from the plain facts of the case that the physician, purely by accident and inadvertence, injected into the body of the insured a deadly poison when he thought he was using a nonpoisonous drug and that there was no question that the death was caused by accident or resulted from accidental means.

The court accordingly held that the trial court had been in error in dismissing the action, reversed the judgment of dismissal and remanded the cause for further proceedings.—*Mulloff v. National Accident & Health Ins. Co., 37 N. E. (2d) 217 (Ohio, 1941).*

Compensation of Physicians: Liability of Employer in Common Law Action to Recover for Medical Services Rendered Employee.—In Indiana, said the Supreme Court of Indiana, a physician who, pursuant to a contract with an employer, renders medical services to a workman injured in the course of his employment may enforce his claim against the employer for the payment of his fees in a court of law, independently of any proceedings instituted under the Indiana workmen's compensation act before the industrial board. No provision in the act purports to take this right away from the physician. The act neither vests in the industrial board exclusive jurisdiction to fix fees for all medical services rendered an injured employee nor limits the recovery by the physician to a proceeding before the board. If an employer hires a physician, it is simply a matter of contract between the physician and the employer. If the amount to be paid is stipulated, the physician is entitled to that sum. If no amount is named, the physician is entitled to receive the reasonable value of his services as determined by the court and a failure to pay gives rise to a common law action that may be prosecuted in the courts. —*Hoffman v. Brooks Const. Co., 41 N. E. (2d) 613 (Ind., 1942).*

Optometry Practice Acts: Information Not Stating Name of Person on Whom Unlicensed Defendant Allegedly Practiced Optometry Defective—An information, said the court of criminal appeals of Texas, that charges the defendant with practicing optometry without having first registered his license to practice as required by law must allege, or satisfactorily account for failure to allege, the name of the person on whom the defendant allegedly practiced optometry. An information lacking in that essential is fatally defective.—*Blumberg v. State, 161 S. W. (2d) 1082 (Texas, 1942).*

Society Proceedings

COMING MEETINGS

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, White Sulphur Springs, W. Va., Sept. 10-12. Dr. James R. Bloss, 418 Eleventh St., Huntington, W. Va., Secretary.

American Association of Railway Surgeons, Chicago, Sept. 10-12. Dr. Raymond B. Kepner, 547 West Jackson Blvd., Chicago, Secretary.

American Congress of Physical Therapy, Pittsburgh, Sept. 9-12. Dr. Richard Kovacs, 2 East 88th St., New York, Secretary.

American Roentgen Ray Society, Atlantic City, N. J., Sept. 22-25. Dr. H. Dabney Kerr, University Hospitals, Iowa City, Secretary.

Colorado State Medical Society, Colorado Springs, Sept. 23-26. Mr. Harvey T. Sethman, 1612 Tremont Place, Denver, Executive Secretary.

Idaho State Medical Association, Sun Valley, Sept. 16-19. Dr. F. B. Jeppesen, 105 North 8th St., Boise, Secretary.

Michigan State Medical Society, Grand Rapids, Sept. 22-25. Dr. L. Fernald Foster, 2020 Olds Tower, Lansing, Secretary.

National Medical Association, Cleveland, Aug. 17-21. Dr. John T. Givens, 1108 Church St., Norfolk, Va., General Secretary.

Nevada State Medical Association, Reno, Sept. 24-26. Dr. Horace J. Brown, 120 North Virginia St., Reno, Secretary.

Oregon State Medical Society, Portland, Sept. 9-11. Dr. John R. Montague, 1020 S.W. Taylor St., Portland, Secretary.

Utah State Medical Association, Provo, Aug. 27-29. Dr. D. G. Edmunds, 610 McIntyre Bldg., Salt Lake City, Secretary.

Washington State Medical Association, Spokane, Aug. 17-19. Dr. V. W. Spickard, 1305 Fourth Ave., Seattle, Secretary.

Wisconsin, State Medical Society of, Milwaukee, Sept. 16-18. Mr. Charles H. Crownhart, 110 East Main St., Madison, Secretary.

Wyoming State Medical Society, Cheyenne, Aug. 16-18. Dr. Marshall C. Keith, Capitol Bldg., Cheyenne, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1932 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Clinical Pathology, Baltimore

12:189-240 (April) 1942

Hemolytic Transfusion Reactions: I. Diagnosis, with Special Reference to Method of Differential Agglutination. A. S. Weiner, Brooklyn.—p. 189.
Specific Morphology of Crystals Appearing in Urine During Administration of Sulfanilamide Derivatives. D. Lehr and W. Antopol, Newark, N. J.—p. 200.
Pellagra and Internal Secretion. C. A. Hellwig and L. H. Forman, Wichita, Kan.—p. 210.
Leukemoid Reaction (Hyperleukocytosis) in Malignancy. L. M. Meyer and S. D. Rotter, Brooklyn.—p. 218.
Obstructive and Metastasizing Carcinoid Tumors of Ileum. G. Dangremond, Chicago.—p. 223.
Massive Metastasis to Brain from Primary Uterine Carcinoma Complicating an Advanced Case of Multiple Sclerosis. N. Mitchell and A. Angrist, Jamaica, N. Y.—p. 232.

American J. Digestive Diseases, Fort Wayne, Ind.

9:147-180 (May) 1942

Familial Occurrence of Chronic Ulcerative Colitis (Thromboulcerative Colitis): Report of Cases. R. J. Jackman and J. A. Bargen, Rochester, Minn.—p. 147.
Gastric Mucosa in Benign Adenomas. R. Schindler, Chicago.—p. 149.
*Bleeding Peptic Ulcer: Clinical Study, with Special Reference to the Meulengracht Regimen. N. W. Chaikin and O. Tannenbaum, New York.—p. 150.
Investigation of the Relationship Between Blood Sugar and General Complaints Following Subtotal Gastric Resection. A. Schwartz, I. Reingold and H. Necheles, Chicago.—p. 151.
Occult Blood, with Note on the Use of Carmine for the Marking of Stools. M. Kirschen, H. Sorter and H. Necheles, Chicago.—p. 154.
Studies on Old Age: V. Active Pancreatic Secretion in the Aged. H. Necheles, F. Plotke and J. Meyer, Chicago.—p. 157.
Id.: VI. Blood Enzymes in the Aged. J. Meyer, H. Sorter and H. Necheles, Chicago.—p. 160.
Effect of Magnesium Sulfate on the Sphincter of Oddi of Man. G. S. Bergh and J. A. Layne, Minneapolis.—p. 162.
Is the Beneficial Effect of Urine Extracts on Mann-Williamson Ulcers Due to Gastric Secretory Depressant in Urine? D. J. Sandweiss and M. H. F. Friedman, Detroit.—p. 166.
On Explanation of the Urobilinuria Present in Cases of Hematoma and New View on Origin of Urobilinogen from Bile Pigment. J. W. G. Ten Bokkel Hinnink, Tiel, Holland.—p. 168.
Prolongation of Survival Time in Mann-Williamson Dogs by Supplementing Diets with Amino Acids. D. Shoch and S. J. Fogelson, Chicago.—p. 173.
*Acute and Chronic Cecal Volvulus. D. C. Browne and G. McHardy, New Orleans.—p. 177.

Bleeding Peptic Ulcer.—In 744 cases of peptic ulcer studied by Chaikin and Tannenbaum, bleeding occurred in 101 cases, an incidence of 13 per cent. In 86 cases of bleeding peptic ulcer the treatment was medical, and in 15 it was surgical. The surgical cases are not considered in this study. The peak of incidence of bleeding peptic ulcer occurred in the third and fourth decades. Fifty-six patients with bleeding ulcer were treated by supportive measures and starvation with a mortality of 6.9 per cent. Among 30 patients receiving the Meulengracht regimen there was one death from a perforation. The feeding treatment appears to have lowered the mortality. It also shortened the average stay in the hospital from thirty-eight to twenty-eight days.

Acute and Chronic Cecal Volvulus.—According to Browne and McHardy, acute intestinal obstruction due to cecal volvulus is infrequent, for few such instances escape confirmatory surgery or autopsy. They add 6 illustrative case reports of acute intestinal obstruction due to cecal volvulus to the limited literature on the subject; 3 of the cases were postoperative. Their statistical study reveals an incidence of only 1.4 per cent among 411 cases of acute intestinal obstruction. A clinical diagnosis of acute cecal volvulus is seldom made, since there are no diagnostic criteria that render a clinical diagnosis feasible. Cecal volvulus must be considered in obscure cases of intestinal obstruction. A mobile cecum probably can exist without clinical manifestations, because this anatomically abnormal condition is present in about 24 per cent of persons. It is likely that many an unexplained abdominal complaint is due to an unrecognized chronic cecal volvulus, certain degrees of torsion permitting spontaneous rectification. Chronically recurring volvulus results in obstructive manifestations of variable severity with colicky right abdominal pain. Perhaps the therapeutic response to the removal of many a chronic appendix may be due to the resultant cecal fixation. In view of the high mortality in the acute obstructive cases it seems practical to advise cecopexy if a diagnosis of subacute or chronic cecal volvulus is made.

American Journal of Medical Sciences, Philadelphia

203:625-780 (May) 1942

Hypertension Electrocardiograms Experimentally Produced and Anatomically Explained: I. Cor Pulmonale. Jane Sands Robb and R. C. Robb, Syracuse, N. Y.—p. 625.
Id.: II. Left Ventricular Strain. Jane Sands Robb and R. C. Robb, Syracuse, N. Y.—p. 634.
Studies on the Distribution of Potential Concerned in the Formation of Electrocardiograms. C. C. Wolferth, Mary Miller Livezey and F. C. Wood, Philadelphia.—p. 641.
Clinicopathologic Correlation Between Hepatic Damage and the Plasma Prothrombin Concentration. N. J. Sweet, S. P. Lucia and P. M. Aggeler, San Francisco.—p. 665.
Plasma Amino Acid Levels in Health and in Measles, Scarlet Fever and Pneumonia. L. E. Farr, W. C. McCarthy and T. Francis Jr., New York.—p. 668.
*Eosinophilic Granuloma and Certain Other Reticuloendothelial Hyperplasias of Bone: Comparison of Clinical, Radiologic and Pathologic Features. P. Gross and H. W. Jacox, Pittsburgh.—p. 673.
Toxicity of Fluorine in Dicalcium Phosphate. F. DeEds, San Francisco.—p. 687.
Respiration in Myasthenia Gravis. D. Laszlo, New York, and F. C. Redlich, Boston.—p. 693.
The Intestine and Chronic Arthritis. A. Bassler, New York.—p. 698.
Amount of Iodine in the Blood and Urine in Patients with Diabetes Insipidus. H. Blotner, Boston.—p. 708.
Studies of the Expectorant Action of Iodides. L. Tuft and N. M. Levin, Philadelphia.—p. 717.
Diagnostic Value of the Takata-Ara Reaction. T. R. Waugh and R. D. McKenna, Montreal, Canada.—p. 722.
*Activated Sterols and Calcium Salts in Treatment of Parathyroid Tetany. E. L. Sevringhaus, Madison, Wis.—p. 726.
Use of Sulfathiazole in Infectious Mononucleosis. H. T. Hoffman, H. D. Lees and B. I. Comroe, Philadelphia.—p. 731.
Improved Method of Obtaining Sustained Controlled Hyperpyrexia with Triple Typhoid Vaccine. H. A. Solomon and E. Somkin, New York.—p. 736.
Clinical Value of Digitalis in Hypertensive Heart Failure: I. With a Normal Rate and a Regular Rhythm. N. Flaxman, Chicago.—p. 741.
Id.: II. With Sinus Tachycardia. N. Flaxman, Chicago.—p. 747.

Reticuloendothelial Hyperplasias of Bone.—Gross and Jacox state that of the various lesions under discussion those of Hand-Christian's disease are the most common. Nevertheless, even the latter is so infrequently encountered that the average pathologist has little familiarity with it. It is not surprising to find that this disease has been diagnosed tuberculosis, osteitis fibrosa, syphilitic osteitis, carcinoma, sarcoma and multiple myeloma. On the other hand, the literature contains statements which imply considerable confidence in ability to arrive at the correct diagnosis. Knowledge of the diseases involving reticuloendothelial proliferations, whether focal as in eosinophilic granuloma or solitary xanthoma, or more generalized as in Hand-Christian's disease or Letterer-Siwe's disease, is far from complete. Biopsies should therefore be encouraged rather than discouraged. The similarity in histopathologic features of eosinophilic granuloma on the one hand and solitary xanthoma, as well as Hand-Christian's disease, on the other is quite close and warrants placing these conditions in the same general disease group. There does not seem to be any observed distinctive roentgenographic or pathologic feature nor other decisive information at present regarding any one of these lesions to justify their dogmatic segregation into separate disease entities. Likewise the existence of cases with features intermediate between Hand-Christian's disease and Letterer-Siwe's disease (or infectious reticuloendotheliosis) raises the question of whether or not

a sharp distinction between the lipoid and the nonlipoid reticuloendothelioses is valid. Three case reports are presented which illustrate the variations in degree, stage of involvement and localization of reticuloendotheliosis.

Activated Sterols and Calcium Salts in Parathyroid Tetany.—Sevringhaus states that large doses of vitamin D may serve to control in parathyroid tetany serum calcium and phosphorus levels adequately but that at current prices this entails an increase in cost to the patient of two to six times that required for similar success with the use of dihydrotachysterol. A detail in the management of the patient with chronic tetany is the choice of calcium salt for use in addition to the small calcium content of the low phosphorus diets. Calcium lactate has been used most widely. Calcium gluconate was advocated because of its solubility, ease of absorption and slightly sweet taste. Calcium phosphate is often prescribed, although the rationale of adding phosphate is incorrect and in spite of the known fact that phosphates in the intestinal tract will reduce the absorption of calcium when the reaction is not acid. The optimal calcium salt is calcium chloride, because this salt is very soluble in water and tends to produce a slightly acid reaction favoring absorption, and because it furnishes the largest proportion of calcium per gram of salt. The chloride is four times as effective as the gluconate and twice as effective as the lactate when serving as a source of calcium. The chief drawback to its use in oral preparations has been its highly astringent effect in the mouth and pharynx. This can be masked satisfactorily by prescribing the chloride as a 25 per cent solution in a vehicle such as the standard elixir or syrup of glycyrrhiza.

American J. Obstetrics and Gynecology, St. Louis

43:733-918 (May) 1942. **Partial Index**

*Serous Adenofibromas and Cystadenofibromas of the Ovary. R. B. Scott, Baltimore.—p. 733.
*Severe Polyneuritis Due to Vitamin B Deficiency in Pregnancy. L. S. McGoogan, Omaha.—p. 752.
Use of Ergonovine in Placental Stage of Labor. M. E. Davis and M. W. Boynton, Chicago.—p. 775.
Clinical and Physiologic Aspects of Uterine Motility During Pregnancy and Labor. C. Fenning, Salt Lake City.—p. 791.
Wound Disruption and Its Management. H. E. Schmitz and J. H. Beaton, Chicago.—p. 806.
Study of Contractions in Labor Based on Kymographic Records Obtained from an Intrauterine Balloon. W. Bickers, Richmond, Va.—p. 815.
Analysis of Abortion Deaths in the District of Columbia for the Years 1938, 1939, 1940. Beatrice Bishop Berle, Washington, D. C.—p. 820.
Weight Studies in Pregnancy. E. G. Waters, Jersey City, N. J.—p. 826.
Additional Observations on Maternal Pulmonary Embolism by Amniotic Fluid. C. C. Lushbaugh and P. E. Steiner, Chicago.—p. 833.
Paraldehyde in Obstetrics, with Particular Reference to Its Use in Eclampsia. L. H. Douglass and R. F. Linn, Baltimore.—p. 844.
Analysis of Late Morbidity in One Hundred Cases of Pregnancy Toxemia. J. O. H. Simrall, Ann Arbor, Mich.—p. 858.
Biologic Assay of Estrogens in Pregnancy Blood. M. A. Goldberger and R. T. Frank, New York.—p. 865.
Length of Menstrual Cycle: Study of 150 Normal Women. J. O. Haman, Brookline, Mass.—p. 870.
Complete Inversion of Uterus Late in Puerperium. F. E. O'Connor, Kingston, N. Y.—p. 878.
Pregnancy Complicated by Acute Perforated Peptic Ulcer. G. W. Anderson, Buffalo.—p. 883.
Carcinoma of Bartholin's Gland. E. R. Pund and W. C. Cole, Augusta, Ga.—p. 887.
Rupture of Scar of a Lower Segment Cesarean Section with Transverse Incision. M. W. Grusetz and L. H. Tisdall, Brooklyn.—p. 890.
Pregnancy Complicated by Hodgkin's Disease. A. H. Klawans, Chicago.—p. 895.

Serous Adenofibromas and Cystadenofibromas of the Ovary.—Scott reports 14 cases of serous adenofibroma and cystadenofibroma of the ovary. These tumors correspond to the typical "fibroma ovarii adenocysticum" of Frankl. Wolfe's case in 1927 is the only 1 previously reported in English literature. The tumors were made up of two component parts, a dense connective tissue matrix in which were embedded numerous small cystic spaces lined by compact, single layered, cuboidal or low columnar, often ciliated, epithelium. "Psammoma bodies" and papillary tendencies were frequent. The tumors were firm and solid, with minute cystic spaces (adenofibromas) or partially cystic with at least one fourth of the mass solid (cystadenofibromas). In 2 cases the neoplasm was bilateral, and in 3 the neoplasm was an incidental laboratory finding. There was no constant associated pelvic disorder of significance, although uterine myomas were found in 6 cases. Pain was the most common presenting complaint in 9 instances, and in 6 of these it could be definitely related to pressure by the tumor. No endocrinologic importance could be attached to these tumors. Five cases of abnormal vaginal bleeding were adequately explained by associated pelvic pathologic conditions. The most striking clinical feature was the age of the patients. In a total of 31 patients with tumors of this distinct group collected from the literature and including this series, 29 (93.5 per cent) were 40 years of age or over and 20 (64.5 per cent) were 50 years or over. Malignancy was not observed, in spite of the fact that the potentialities in this respect would appear to be as great as in the serous cystadenomas and the fibromas. It is suggested that these tumors be classified as a special type of epithelial tumor of the ovary under the subhead of serous cystadenoma, as previously suggested by Taylor.

Polyneuritis in Pregnancy Due to Vitamin B Deficiency.—In 1932 McGoogan reported 5 cases of severe polyneuritis following pernicious vomiting of pregnancy. Since that time 15 additional cases have been observed. Studies by a number of investigators have demonstrated that the condition is caused by vitamin B deficiency. The severe cases of polyneuritis develop early in pregnancy and are usually preceded by pernicious vomiting. The deficiency of vitamin B_1 in pernicious vomiting is brought about by a lack of food intake, by a failure of retention of food ingested and by a high carbohydrate diet accompanied by administration of large amounts of dextrose. The usual history is one of vomiting, of attempts at high carbohydrate ingestion and the administration of dextrose with or without improvement and the onset of peripheral neuritis. The first symptoms are those of a generalized weakness, pain in the calves, numbness, tingling of the hands and feet and inability to walk. There is atrophy of muscles and skin and diminished or absent reflexes in the involved area. Retention of urine or incontinence with overflow, constipation, paralysis of the abdominal muscles, paralysis of the accessory muscles of the chest and involvement of the bulbar area with diaphragmatic paralysis, tachycardia, difficulty in phonation and deglutition occur in the order mentioned. Mental confusion of the Korsakoff type is frequently present. The author presents the clinical histories of 15 cases. The frequency of ocular symptoms is noteworthy (26.6 per cent). The author reviews 130 cases of severe polyneuritis from the literature, thus bringing the total to 145. Of these, 40 were treated with varying amounts and varying fractions of the vitamin B complex. In the total series there were 40 deaths, or a mortality of 27.5 per cent. Thirty-seven of the deaths occurred in the 105 patients receiving no vitamin B complex, an incidence of 35.2 per cent, while only 3 of the 40 patients receiving vitamin B complex died, an incidence of 7.5 per cent. From 50 to 100 mg. of thiamine hydrochloride should be given daily in polyneuritis. Therapeutic abortion is definitely contraindicated and, if done, increases the mortality rate. Ultimate recovery is slow under the best of therapy and may require fifteen to eighteen months.

American Journal of Orthopsychiatry, Menasha, Wis.

12:191-380 (April) 1942. **Partial Index**

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Complaint of Nervousness and Psychoneuroses: Epidemiologic Viewpoint. P. Lemkau, C. Tietze and Marcia Cooper, Baltimore.—p. 214.
Relation of Infant's Weight and Body Build to Locomotor Development. J. G. Peatman, New York, and R. A. Higgons, Port Chester, N. Y.—p. 234.
The Young Traffic Offender. L. S. Selling, Detroit.—p. 241.
Predicting Depth of Hypnosis by Means of Rorschach Test. T. R. Sarbin, Minneapolis, and L. W. Madow, Cleveland.—p. 268.
Mental Hygiene Interviewing: Therapeutic Approach. R. G. Hinckley and Anne F. Fenlason, Minneapolis.—p. 309.
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Reactions of Children to Blackouts: Preliminary Note. J. C. Solomon, San Francisco.—p. 361.

American Review of Tuberculosis, New York

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Contralateral Lung During Pneumothorax Treatment. F. L. Jennings, Indianapolis, and P. M. Mattill, Oak Terrace, Minn.—p. 461.
*Causes of Death in Surgical Treatment of Pulmonary Tuberculosis. R. Ritterhoff, Cincinnati.—p. 467.
*Endobronchial Tuberculosis: Its Role in Causing Rapid Reexpansion or Atelectasis of the Lung Following Closed Pneumonolysis. O. C. Brantigan, Baltimore; R. Hoffman, Henryton, Md., and D. F. Proctor, Baltimore.—p. 477.
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Ambulatory Pneumothorax: Its Role in a Program of Treatment and Prevention of Tuberculosis. L. B. Greentree, Cleveland Heights, Ohio.—p. 499.
Quantitative Studies of Tuberculin Reaction: III. Tuberculin Sensitivity in Relation to Active Tuberculosis. M. L. Furcolow, Bethesda, Md.; Barbara Hewell, Cincinnati, and W. E. Nelson, Philadelphia.—p. 504.
Jaundice in Tuberculosis. F. J. Geraghty, Baltimore.—p. 521.
Electrocardiography in Tuberculous Patients. H. J. Lorge, Rutland, Mass.—p. 528.
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Present Practice in Staining Mycobacterium Tuberculosis in Representative Institutions. J. E. Pottenger, Monrovia, Calif.—p. 568.
Bovine Tuberculosis: Its Incidence in Bone, Joint and Cervical Lymph Node Lesions in Italy. P. F. de Gara, New York.—p. 576.
Bovine Tubercle Bacilli in Sputum. Margaret Beattie and R. Nicewonger, Berkeley, Calif.—p. 586.
Steam Heating System as Source of Suction for Intracavitary Aspiration. J. V. Thompson, Indianapolis.—p. 589.

Death in Surgical Treatment of Tuberculosis.—The group of thoracoplasties reviewed by Ritterhoff includes 181 patients subjected to 408 operations. There were 21 deaths, of which 16 were early ones. Necropsies were performed on 9 of the 16 patients who died within one month following operation. These necropsies suggest that a variety of factors may be operative in the early fatalities following thoracoplasty. This is in keeping with the principle that injury to one of a group of systems anatomically and physiologically related is reflected by departures from normal in related systems. This variety of factors is particularly conspicuous in the second group of cases, in which right cardiac hypertrophy, cardiac dilatation, changes suggestive of alkalosis and fat embolism were prominent. The presence of fat embolism and focal ulcerative esophagitis and duodenitis emphasizes that, even with present surgical technic, thoracoplasty is still attended by considerable trauma. This is particularly true in revision procedures, which are usually more extensive than the primary operation. Altered thoracic aerodynamics, induced either by paradoxical respiration or by increased pulmonary circulation pressure, may result in alkalosis and tissue anoxemia. Contralateral tuberculous bronchopneumonia may result from aspiration of an empyema by way of a bronchopleural fistula or from blood stream distribution of infectious material. This complication, which is thought to be a frequent cause of death, was significant in only 2 cases.

Endobronchial Tuberculosis and Reexpansion or Atelectasis.—Brantigan and his collaborators point out that the increasing use of bronchoscopy for tuberculous patients has revealed a significant percentage of pulmonary lesions to be complicated by endobronchial lesions. These lesions influence the course of the parenchymal disease. In the presence of an endobronchial lesion a closed pneumonolysis may be followed either by the creation of a check valve mechanism resulting in rapid reexpansion of the lung or by a complete occlusion resulting in atelectasis. The authors encountered 4 patients in whom closed pneumonolysis was followed by rapid reexpansion and obliteration of the pneumothorax space. Fluoroscopic examinations were performed three hours after the completion of the pneumonolysis, at which time almost complete reexpansion was observed. Subcutaneous emphysema was evident. Pneumothorax refills were immediately administered and repeated within four hours. The following morning complete reexpansion had occurred in 1 case; the upper and middle lobes had reexpanded in the other 3 cases, but there was a partial collapse of the lower lobe. Along with the frequent refills there was an increasing subcutaneous emphysema. The accepted explanation for the loss of the pneumothorax space following a closed pneumonolysis is excessive leakage of air through the wounds made by the thoracoscopic instruments. The authors do not consider leakage of air per se as the cause of reexpansion of the lung. If the mere escape of air through the puncture wounds were the cause of loss of the pneumothorax space, it should occur in all cases but does not. The presence of an endobronchial lesion in the main stem bronchus, at the orifice of the branch bronchus or within the lumen of the branch bronchus explains the rapid loss of air, and subcutaneous emphysema is the result of the reexpanded lung and not the cause. Subsequent bronchoscopy in all 4 cases revealed endobronchial lesions at the orifices of the branch bronchi which had caused partial obstruction. The authors present a case history which illustrates the rapid reexpansion following a closed pneumonolysis. They admit that it is not frequent. When it does occur it offers a problem for prompt treatment, since in the case of reexpansion a successful pneumothorax is lost and in the case of atelectasis the problem of the unexpandable lung will arise. Routine bronchoscopy before the pneumonolysis is performed with local treatment of the endobronchial lesion is the procedure of choice. Edema and/or tenacious secretions may institute the same sequence of events as does a frank endobronchial lesion.

Archives of Internal Medicine, Chicago

69:721-930 (May) 1942

*Induced Thiamine (Vitamin B_1) Deficiency and Thiamine Requirement of Man: Further Observations. R. D. Williams, H. L. Mason, B. F. Smith and R. M. Wilder, Rochester, Minn.—p. 721.
Duplicate Measurements of Circulation Time Made with Alpha Lobeline Method. A. Lilienfeld and K. Berliner, New York.—p. 739.
*Neoarsphenamine Therapy of Bacterial Infections, with a Method of Administration to Maintain Uniform Blood Levels for Treatment of Serious Staphylococcic Infections and Subacute Bacterial Endocarditis. E. E. Osgood, Portland, Ore.—p. 746.
Clinical Studies of Drug Addiction: Physical Dependence, Withdrawal and Recovery. C. K. Himmelsbach, Lexington, Ky.—p. 766.
Concentration of Carbon Dioxide in Expired Air. P. K. Boyer, Summit, N. J., and C. V. Bailey, New York.—p. 773.
Alkalosis Complicating the Sippy Treatment of Peptic Ulcer: Analysis of One Hundred and Thirty-Five Episodes. J. B. Kirsner and W. L. Palmer, Chicago.—p. 789.
Peripheral Blood Flow in Myxedema. H. J. Stewart and W. F. Evans, New York.—p. 808.
Effective Renal Blood Flow, Glomerular Filtration Rate and Tubular Excretory Mass in Arterial Hypertension. P. P. Foà, W. W. Woods, M. M. Peet and Naomi L. Foà, Ann Arbor, Mich.—p. 822.
Use of Alpha Tocopherol in Treatment of Neuromuscular Disorders. A. J. Lubin, San Francisco.—p. 836.
Blood: Review of Recent Literature. F. H. Bethell, C. C. Sturgis, R. A. Hettig and O. T. Mallery, Ann Arbor, Mich.—p. 856.

Deficiency and Requirement of Thiamine.—Williams and his collaborators found in a previous study that severe restriction of thiamine was associated with inactivity, apathy, serious derangement of metabolic processes, loss of weight and prostration. In the present study moderate, prolonged restriction of this vitamin, but not of food calories, was associated with states of emotional instability reflected by irritability and moodiness, quarrelsomeness, lack of cooperation, vague fears progressing to agitation, mental depression, variable restriction of activity and numerous somatic symptoms. Detectable metabolic disturbances occurring irregularly were of variable degrees of severity and were reflected in disturbance of function of various tissues of the body. In all cases of induced deficiency of thiamine, mental and physical inefficiency preceded by weeks or months other more objective manifestations. In previously reported studies persons maintained themselves as long as one hundred and forty-seven days on intakes of thiamine not greater than 0.07 mg. for each thousand calories of the diet, but they lost weight and strength. In the present study persons maintained their weight on an intake of 0.22 mg. for each thousand calories, but their physical and mental efficiency and the sense of well-being was greatly improved when 0.5 mg. of thiamine hydrochloride was provided with this number of calories. The data indicate that for persons in this study the "minimal" daily requirement of thiamine was between 0.22 and 0.50 mg. for each thousand calories of a diet providing carbohydrates and fat in conventional proportions. The data also indicate that

the "optimal" intake was not less than 0.5 mg., or more than 1.0 mg. for each thousand calories of such a diet. Individual variations dependent on differences in the rate of metabolic exchanges of energy or material, as well as on environmental factors, activity, diet and intestinal absorption, must receive consideration when the requirement of thiamine of the individual person is judged.

Neoarsphenamine in Bacterial Infections. — Osgood points out that neoarsphenamine has received little attention as a chemotherapeutic agent against infection other than syphilis. Marrow culture technic permits controlled quantitative studies of the effectiveness of chemotherapeutic agents against bacterial infections in the presence of living human cells. Neoarsphenamine was proved by this method to be highly effective against staphylococci and certain groups of Streptococcus viridans (alpha streptococcus). Neoarsphenamine has to be present for an appreciable period, from forty-eight to seventy-two hours or longer, in order to insure maximum effect. The author has made more than a hundred marrow culture experiments. Neoarsphenamine in concentrations which do not kill living human cells is effective against some strains of Strep. viridans, most staphylococci and some other bacteria. The effective concentration can be maintained clinically. A few patients with staphylococcic bacteremia treated with neoarsphenamine have recovered. Several patients with subacute bacterial endocarditis so treated were free from symptoms for eight to sixteen months, but more patients must be followed for two years or longer before final appraisal is justified. The therapy involves risk of toxicity and should be used only in cases of serious infection and under careful supervision. Neoarsphenamine plus sulfathiazole may be more effective against certain bacteria than either alone. Of 34 unselected patients with bacterial endocarditis, 4 remained free from symptoms and 12 had temporary clinical improvement with return to normal temperature. No patient treated only with drugs of the sulfonamide group showed more than temporary improvement. It is recommended that neoarsphenamine therapy be not discontinued before twenty-five days, even though there is no earlier clinical evidence of benefit. The author is now giving 100 mg. of ascorbic acid and 40 mg. of thiamine hydrochloride daily during neoarsphenamine therapy with the hope of decreasing toxicity. It is also thought advisable not to discontinue neoarsphenamine for mild polyneuritis or dermatitis.

Archives of Neurology and Psychiatry, Chicago

47:707-878 (May) 1942

Olfactory-Parotid Reflex: Study of One Hundred and Fifty Patients with Disorders of the Central Nervous System; Preliminary Report. C. A. Elsberg, H. Spotnitz and E. I. Strongin, New York.—p. 707.
*Electroencephalographic Studies on Neurosyphilis. K. H. Finley, A. S. Rose and H. C. Solomon, Boston.—p. 718.
Mixed Tumors of the Spinal Canal. L. A. French and W. T. Peyton, Minneapolis.—p. 737.
Brain in Sickle Cell Anemia. F. Wertham, N. Mitchell and A. Angrist, New York.—p. 752.
Diverticula of the Lateral Ventricles Extending into the Cerebellar Fossa. A. E. Childe and F. L. McNaughton, Montreal, Canada.—p. 768.
Leukocytosis During Various Emotional States. A. T. Milhorat, S. M. Small and O. Diethelm, New York.—p. 779.
Intracranial Blood Flow in Dementia Paralytica, Cerebral Atrophy and Schizophrenia. M. Rosenbaum, E. Roseman, C. D. Aring and E. B. Ferris Jr., Cincinnati.—p. 793.
Factor of Hypoxia in Shock Therapies of Schizophrenia. H. E. Himwich and J. F. Fazekas, Albany, N. Y.—p. 800.
Parapyramidal Fasciculotomy in the Brain Stem. J. H. Siris, Brooklyn.—p. 808.
Studies of Sensation of Vibration: II. Vibration Sensibility in the Face Following Retrogasserian Neurectomy. M. Brown and G. K. Yacorzynski, Chicago.—p. 813.
Electroencephalograms of Thiamine Deficient Pigeons. R. L. Swank, Boston, and H. H. Jasper, Montreal, Canada.—p. 821.
*Periarteritis Nodosa: Clinicopathologic Report, with Special Reference to Central Nervous System. N. Malamud and D. B. Foster, Ann Arbor, Mich.—p. 828.
Some Problems of Wartime Neurology. W. Penfield, Montreal, Canada.—p. 839.

Electroencephalographic Studies on Neurosyphilis.—The report by Finley and his associates is a preliminary analysis of electroencephalographic records obtained during the past two and one-half years on 175 patients from the neurosyphilis clinic of the Boston Psychopathic Hospital. The records were obtained with a six channel ink writing oscillograph of the Grass type. In 124 the condition was diagnosed as dementia paralytica, in 20 as tabes dorsalis, in 11 as juvenile dementia paralytica, in 8 as optic nerve atrophy and in 12 as meningovascular neurosyphilis. The tracings are compared with records from 215 normal controls. Normal electroencephalographic tracings were found for 19 per cent of the patients (treated and untreated) and for 70 per cent of the controls. Borderline records were found for 28 per cent of the patients and for 23 per cent of the controls. Abnormal records were found for 53 per cent of the patients and for 7 per cent of the controls. Abnormal electroencephalographic tracings were as common among patients with pure tabes and those with optic nerve atrophy as among patients with dementia paralytica. The records of 73 untreated patients with dementia paralytica showed a higher percentage of borderline and abnormal patterns than the records of 63 patients who had received treatment for nine months or more. No characteristic electroencephalographic pattern was found to be associated with neurosyphilis. This indicates its insignificant diagnostic value. The 73 untreated patients with dementia paralytica presented a degree of abnormality in the electroencephalogram which corresponded roughly with the clinical severity of the disease. Follow-up electroencephalographic records on patients undergoing treatment with clinical improvement often showed concurrent improvement in the electroencephalographic tracings. Electroencephalograms with abnormally slow high voltage cycles were more likely to be found among patients with dementia paralytica who showed confusion, disorientation and profound memory loss, while rapid cycles were more common among those with euphoria or other mood disturbances and paranoid ideas without the aforementioned signs. Slow cycles indicated more serious cerebral dysfunction than did rapid cycles. The majority of abnormal patterns were similar from homologous areas of the two hemispheres. This observation, together with the fact that abnormal records were as frequent in cases of pure tabes and optic nerve atrophy, suggests that lesions in or near the upper portion of the midbrain and the diencephalon may have more to do with the abnormal cortical electrical potentials than the cortical lesions.

Periarteritis Nodosa.—Malamud and Foster show that there is little information available on the involvement of the central nervous system in periarteritis nodosa. They report a case presenting multiple neurologic changes and compare their observations with those in similar cases in the literature. They emphasize that involvement of the central nervous system is not uncommon in periarteritis nodosa. Pathogenically the condition is regarded as panarteritis and the parenchymal changes as of vascular origin.

Archives of Otolaryngology, Chicago

35:687-844 (May) 1942

*Otorhinogenic Meningitis: Report of Fifty-Eight Cases. H. J. Burman, M. Rosenbluth and D. Burman, New York.—p. 687.
Correction of Facial Defects with Latex Prostheses: Technic. A. M. Brown, Chicago.—p. 720.
Prognosis of Laryngeal Paralysis Following Thyroidectomy. E. J. Mulligan, Baltimore.—p. 732.
Atypical Facial Neuralgia. R. C. Martin, San Francisco.—p. 735.
Local Use of Sulfanilamide and Its Derivatives in the Ear, Nose and Throat. E. S. Connell and B. C. Trowbridge, Kansas City, Mo.—p. 740.
Neuroepithelioma in the Temporal Bone: Invasion of the Petrous and Squamous Portions, with Extension into the Middle and Posterior Cranial Fossae. J. A. Tuta, Chicago.—p. 745.
Sphenoid Sinus: Safe and Simple Method of Irrigation. G. E. Tremble, Montreal, Canada.—p. 755.
Calculus of Salivary Glands. E. Tholen, Los Angeles.—p. 761.
Clinical Application of Vestibular Tests. J. K. Leasure, Indianapolis.—p. 766.
Septicemia Due to Friedländer's Bacillus: Report of Case Following Chronic Otitis Media Complicated by Sinus Thrombosis; Recovery Following Therapy with Sulfanilamide and Its Derivatives. J. W. McCall and M. S. Freeman, Cleveland.—p. 772.
Endaural Mastoidectomy: Experience in a Series of Seventy-Six Cases. G. H. Woodruff, Joliet, Ill., and R. Henner, Chicago.—p. 777.
Sulfathiazole in Treatment of Sinusitis. R. F. Marks, San Francisco.—p. 794.

Otorhinogenic Meningitis.—Burman and his associates review 160 consecutive cases of meningitis and show a 60 per cent rate of cure in cases of otogenic and a 33 per cent rate in cases of rhinogenic meningitis. In bacterial meningitis in which

no other focus is apparent the infection should be suspected as emanating from the ear, nose or throat. The reviewed series shows that 36.2 per cent of all meningitides are of otorhinogenic origin. The incidence is probably higher, since necropsy occasionally reveals an unsuspected pathologic condition in these areas, with no other demonstrable cause. Because the sulfonamide derivatives obscure the clinical features and cause changes in the blood and in the roentgenogram, it is advisable to perform the diagnostic tests before instituting chemotherapy. The authors observed 3 cases in which no suppuration could be determined and in which the drum membrane looked normal; there was only the vaguest history of aural trouble, and yet on operation a completely broken down mastoid was revealed. Although cures have been reported from chemotherapy alone, best results have been obtained with the combination of surgical treatment, chemotherapy and administration of serum in properly selected cases. The drainage of a demonstrable or suspected focus is an accepted surgical principle. It is not safe to exaggerate the efficiency of the sulfonamides to the point of considering surgical intervention unnecessary. Operation should be carried out in every case of meningeal disease in which otologic or rhinologic involvement is suspected. The authors feel that intranasal operation on sinuses in meningitis is not as satisfactory as the external approach. They have adopted the so-called radical ethmosphenofrontal sinus operation whenever these sinuses are involved. Subsequent to this series the authors filled the mastoid cavity with sulfanilamide powder and closed the mastoid wound. They have not attempted to do this in cases with sinus involvement. The efficacy of drug therapy depends largely on the extent of pneumatization of the mastoid, and this accounts for its relative inefficiency in the well ventilated accessory nasal sinuses, the air cavities permitting collection of infected exudate. With so many cases of recovery from meningitis one must guard against presuming that the cure was effected by chemotherapy alone. When there is bone necrosis, abscess formation or pooling of purulent material in air cavities, the sulfonamide derivatives will be ineffective unless the diseased areas are surgically evacuated.

Cancer Research, Baltimore

2:309-380 (May) 1942

Transplantation of Kidney Carcinoma from Adult Frogs to Tadpoles. R. Briggs, Montreal, Canada.—p. 309.
Abnormalities in Distribution of Biotin in Certain Tumors and Embryo Tissues. P. M. West and W. H. Woglom, New York.—p. 324.
Transplantation of an Adenocarcinoma of the Preputial Gland in Mice of the A Strain. L. C. Strong, New Haven, Conn.—p. 332.
Fluorescent Porphyrins in Harderian Glands and Susceptibility to Spontaneous Mammary Carcinoma in Mice. F. H. J. Figge, L. C. Strong, L. C. Strong Jr. and A. Shanbrom, New Haven, Conn.—p. 335.
Reciprocal Infection of Ducks and Chickens with Tumor Inducing Viruses. F. Duran-Reynals, with notes on histopathologic findings by H. Bunting, New Haven, Conn.—p. 343.
Conditions Required to Produce a Prolonged Hypothermia in the Mouse. F. Bischoff, Santa Barbara, Calif.—p. 370.
Cholesterol Content of Normal and Enlarged Prostates. G. I. M. Swyer, Oxford, England.—p. 372.

Endocrinology, Springfield, Ill.

30:627-834 (May) 1942. **Partial Index**

Effects of the Pancreas and the Adrenals on Production of Nitrogen Storage with Pituitary Preparations. O. H. Gaebler and A. R. Robinson, Detroit.—p. 627.
Ovarian Weight Increase as an Objective Measure for Assay of Prolan. F. Bischoff, Santa Barbara, Calif.—p. 667.
Changes in Blood Chemistry Associated with Circulatory Failure in the Adrenalectomized Dog. J. W. Remington, V. A. Drill, W. Kleinberg and W. W. Swingle, Princeton, N. J.—p. 692.
Conditions Modifying Effectiveness of Testosterone, Testosterone Propionate and Methyl Testosterone. R. R. Greene, Chicago; M. W. Burrill, Summit, N. J.; E. Oppenheimer and D. Nelson, Chicago.—p. 734.
Further Observations on Relative Absorption Rates of Pellets of Various Crystalline Compounds Implanted Subcutaneously in Rats. T. R. Forbes, Baltimore.—p. 761.
Evaluation of Various Methods for the Bioassay of Dihydrotachysterol. E. W. McChesney and H. Kocher, Rensselaer, N. Y.—p. 787.
Role of Nutrition in Response of Blood Lipids to Thyroidectomy. C. Entenman, I. L. Chaikoff, Berkeley, Calif., and F. L. Reichert, San Francisco.—p. 794.
Influence of Certain Steroid Hormones on Diffusion of Chloride into Peritoneal Space. A. E. Rakoff and A. Cantarow, Philadelphia.—p. 816.

Georgia Medical Association Journal, Atlanta

31:141-182 (April) 1942

Pain Malady: Surgical Relief of Same. J. C. Weaver, Atlanta.—p. 141.
Orthostatic Hypotension. J. C. Massee, Atlanta.—p. 147.
Physical Condition of Georgia's Manpower as Revealed by Selective Service. E. H. Greene, Atlanta.—p. 151.
Coronary Thrombosis: Report of a Study of Fifty-Five Cases. E. A. Bancker Jr., Atlanta.—p. 156.
Acute Cor Pulmonale: Report of Three Cases. R. B. Logue, Atlanta.—p. 163.
Clinical and Roentgenologic Aspects of Intestinal Obstruction. M. B. Hatcher and M. Mass, Macon.—p. 167.

Hawaii Medical Journal, Honolulu

1:231-286 (March) 1942

Exanthem Subitium (Roseola Infantum): Review of Literature and Report of Eighty Cases. T. Yoshina, Hilo.—p. 235.
Ward Rounds in Sugar Plantation Hospital: Reports of Five Cases. H. M. Patterson, Olaa.—p. 240.
Clinical Suggestions from a Plantation Hospital. W. N. Bergin, Laupahoehoe.—p. 243.
Pneumococcic Meningitis: Report of Apparent Cure with Sulfanilamide. C. B. Brown, Hilo.—p. 245.
Prematurity: Leading Cause of Infant Deaths in Hawaii; Proposed Plan for Care of Premature Infants. C. L. Wilbar Jr., Honolulu.—p. 247.
Dyschondroplasia (Ollier's Disease): Review of Syndrome and Report of Case. R. T. Eklund, Pepeekeo.—p. 249.

Illinois Medical Journal, Chicago

81:341-424 (May) 1942

*Significance of the Negri Body in Diagnosis and Epidemiology of Rabies. H. N. Johnson, Montgomery, Ala.—p. 382.
Role of the Pathologist in Management of Cancer. J. P. Simonds, Chicago.—p. 388.
Advances in Ophthalmology in 1941. D. Snydacker, Chicago.—p. 392.
Hemochromatosis: Case Report. H. J. Isaacs, H. F. DeFeo and S. E. Telser, Chicago.—p. 394.
Role of Pathology in Medicine. M. H. Barker, Chicago.—p. 396.
Internal Fixation of Femoral Neck Fractures in Psychotic Patients: Preliminary Report. S. R. Rubert, Chicago, and A. Simon, Kankakee.—p. 399.
Prevention of Urolithiasis in the Immobilized Patient. B. L. Stewart, Springfield.—p. 402.
Hypertension (Goldblatt): Clinicopathologic Interpretation. B. C. Corbus and B. C. Corbus Jr., Evanston.—p. 405.
Management of Mentally Handicapped Children. B. I. Beverly, Chicago.—p. 408.
Treatment of Friedländer's Septicemia by Sulfadiazine with Recovery. G. C. Turnbull, Fort Bliss, Texas.—p. 412.

Negri Body in Rabies.—According to Johnson, Negri bodies cannot always be found in man and animals dying of rabies. It is necessary to resort to animal inoculation when the microscopic examination of a brain specimen is negative. All brain specimens received at the Georgia State Health Department in 1937 for the diagnosis of rabies were examined microscopically, and those found negative were studied by mouse inoculation. Of the 771 specimens found positive for rabies, 10.5 per cent were Negri negative. In an epizootic of fox rabies, 137 brain specimens were positive for rabies by mouse inoculation and 9.4 per cent of these were microscopically negative. An analysis of 92 mouse positive brain specimens obtained in Alabama from dogs that had been vaccinated one month to one year before the onset of rabies demonstrated that 14 per cent were Negri negative. When dogs were experimentally infected with rabies by intramuscular inoculation, 39.7 per cent of the animals were negative by microscopic examination. Forty-six per cent of the dogs developing rabies were vicious at some time during the course of the disease. Only 21.4 per cent of these were Negri negative as compared with 52 per cent for the dogs with paralytic rabies. This partially explains the discrepancy between the Negri findings in natural and experimental rabies, as the majority of routine specimens are from vicious and biting dogs. The duration of symptoms before death is correlated to the absence or abundance of Negri bodies. Vaccinated dogs dying of rabies exhibited the same clinical course as unvaccinated controls, and the error in microscopic diagnosis was approximately the same in the two groups. The studies suggest that rabies street virus is altered in either virulence or manner and site of multiplication during epizootics of the disease, and at this time a higher proportion of the infected animals will be Negri negative. The rapid microscopic diagnostic method of Sellers is recommended. The indications for animal inoculation of brain specimens are enumerated, and the white mouse is recommended for the purpose.

Journal of Clin. Endocrinology, Springfield, Ill.

2:209-278 (April) 1942. **Partial Index**

Clinical Comparison of Three Commercial Estrogenic Preparations. F. J. Stoddard, Ann Arbor, Mich., and Ida Metzger, Ypsilanti, Mich.—p. 209.
Assay in the Human Female of Synthetic Estrogen, 118B. S. C. Freed, W. M. Eisin and J. P. Greenhill, Chicago.—p. 213.
Cyclic Endometrial Response to Prolonged Administration of Estradiol in the Castrate Woman. G. di Paola and E. B. del Castillo, Buenos Aires, Argentina.—p. 215.
*Estrogenic Substances in Treatment of Pigmented Areas. F. Rocca, Montevideo, Uruguay.—p. 217.
Association of Uterine Fibromyomas with Other Clinical Conditions. R. C. Moehlig, Detroit.—p. 219.
Effect of Excess of Ingested Carbohydrate on Glycogen Content of Vaginal Epithelium. J. R. Willson, Ann Arbor, Mich., and Mabel Louise Goforth, Ypsilanti, Mich.—p. 223.
Clinical Use of Testosterone in Male Climacteric. S. F. Goldman and M. J. Markham, New York.—p. 237.
Effect of Pregnant Mare Serum Hormone on Case of Primary Hypo-Ovarianism. R. G. Bonime, Brooklyn.—p. 254.
Intersexuality Associated with Malignant Intra-Abdominal Teratoma of Seminoma Type. R. C. Moehlig, Detroit.—p. 257.
Effect of Vitamin B Complex in Diabetes Mellitus. G. B. Robson, W. C. Cutting and H. Gray, San Francisco.—p. 262.
Repeated Glucose Tolerance Test in Hyperthyroidism. H. J. John, Atlanta, Ga.—p. 264.
Studies of Circulation and Respiration in Patient with Anasarca Following Administration of Cortin and Sodium Chloride. M. D. Altschule and N. Zamcheck, Boston.—p. 269.

Estrogens and Pigmentation.—Rocca reports disappearance of pigmentary patches of the face of a climacteric patient to whom estrogen was administered first locally and then by injection.

Journal of Clinical Investigation, New York

21:257-368 (May) 1942

Osmometric Behavior of Normal Human Erythrocytes. G. M. Guest and Mary Wing, Cincinnati.—p. 257.
Excretion of Specific Fluorescent Substances in the Urine in Experimental Nicotinic Acid Deficiency. V. A. Najjar, H. J. Stein, L. E. Holt Jr. and Carol V. Kabler, Baltimore.—p. 263.
Study of Reflex Mechanism of Sweating in the Human Being: Effect of Anesthesia and Sympathectomy. R. Gurney and I. L. Bunnell, Buffalo.—p. 269.
Metabolism of Amino Acids in Diabetes Mellitus. J. A. Luetscher Jr., Baltimore.—p. 275.
*Chemotherapy of Pneumococcic Meningitis, with Special Reference to Sulfathiazole. F. B. Cooper, P. Gross and M. L. Hagan, Pittsburgh.—p. 281.
Comparison of Results of the Normal Ballistocardiogram and a Direct Fick Method in Measuring the Cardiac Output in Man. A. Cournand, H. A. Ranges and R. L. Riley, New York.—p. 287.
In Vitro and In Vivo Effect of Sulfonamides on Streptococcic Antifibrinolysin Test. W. M. M. Kirby and L. A. Rantz, San Francisco.—p. 295.
Latent Liver Disease in Persons Recovered from Catarrhal Jaundice and in Otherwise Normal Medical Students as Revealed by the Bilirubin Excretion Test. A. Kornberg, Rochester, N. Y.—p. 299.
Vitamin A Deficiency in Laënnec's Cirrhosis: Relative Significance of the Plasma Vitamin A and Carotenoid Levels and Dark Adaptation Time. C. Haig and A. J. Patek Jr., New York.—p. 309.
Effect of External Pressure on Vascular Volume of the Forearm and Its Relation to Capillary Blood Pressure and Venous Pressure. C. E. McLennan, Margaret T. McLennan and E. M. Landis, Charlottesville, Va.—p. 319.
Effect of Epinephrine on the Volume of the Blood. N. L. Kaltreider, G. R. Meneely and J. R. Allen, Rochester, N. Y.—p. 339.
Complement Activity in Pneumonia. D. D. Rutstein and W. H. Walker, Albany, N. Y.—p. 347.
Coagulase Test for Staphylococci and Its Correlation with Resistance of the Organisms to Bactericidal Action of Human Blood. W. W. Spink and Jean Jermsta Vivino, Minneapolis.—p. 353.
Calculation of Heat Production from Insensible Loss of Weight. Margaret W. Johnston and L. H. Newburgh, Ann Arbor, Mich.—p. 357.
Effects on Cardiovascular System of Fluids Administered Intravenously in Man: IV. Lung Volume and Pulmonary Dynamics. M. D. Altschule, D. R. Gilligan and N. Zamcheck, Boston.—p. 365.

Sulfathiazole in Pneumococcic Meningitis.—Cooper and his co-workers say that because the sulfathiazole content of the brain and cerebrospinal fluid is low compared to that of the blood during medication, it has been claimed that sulfathiazole is of little or no value in bacterial meningitis. The experimental data presented and the clinical cases collected from the literature show that the statement requires modification. The authors stipulate that: 1. Sulfanilamide, sulfapyridine, sulfathiazole and sulfamethylthiazole are equally effective in the treatment of experimental type 2 (Binda) pneumococcic meningitis in rats. 2. The sulfathiazole content of the brains of rats which received 300 mg. of sulfathiazole orally in twenty-four hours averaged 1.6 mg. per hundred grams at the time the blood average was 5 to 6 mg. per hundred cubic centimeters. 3. Clinical pneumococcic meningitis has been successfully treated with sulfanilamide as well as with sulfapyridine. 4. Other clinical data show recoveries from pneumococcic, streptococcic, staphylococcic and meningococcic meningitis, which were attributed to sulfathiazole therapy in spite of the generally recognized low concentration of this drug in the cerebrospinal fluid. 5. Because of lack of decisive data at present, it is not possible to judge which of the sulfonamide drugs is significantly superior in the clinical treatment of pneumococcic meningitis.

Journal of Investigative Dermatology, Baltimore

5:49-106 (April) 1942

Studies with Antigens: XIII. Significance of Reactions to Intracutaneous Tests Performed with Solutions of Purified Extracts of Ragweed Pollens. B. G. Efron and C. H. Boatner, New Orleans.—p. 49.
Untoward Reactions to Patch Tests. E. Epstein, Oakland, Calif.—p. 55.
In Vitro Studies on Pigmentation: I. Oxidation of Tyrosine by Ultraviolet Irradiation. S. Rothman, Chicago.—p. 61.
Id.: II. Influence of Ascorbic Acid on Oxidation of Tyrosine by Ultraviolet Irradiation. S. Rothman, Chicago.—p. 67.
Determination of *p*H of Skin of Man and Common Laboratory Animals. J. H. Draize, Washington, D. C.—p. 77.
Autonomic Skin Test with Electrophoresis. F. Deutsch and R. Nadell, St. Louis.—p. 87.
Effect of Alkalis on Stability of Keratins. A. B. Chiego and H. Silver.—p. 95.

Journal of Lab. and Clinical Medicine, St. Louis

27:983-1110 (May) 1942

The Origin and Nature of Cabot Ring Bodies of Erythrocytes. E. M. Schleicher, Minneapolis.—p. 983.
*Treatment of Gonorrheal Urethritis in the Male with Sulfonamide Derivatives: Study of 199 Cases. L. W. La Towsky, F. Knight, C. A. W. Uhle and R. B. Baker, Philadelphia.—p. 1001.
Pyelitis with Septicemia Caused by Shigella Paradysenteriae. Edith Haynes, S. A. Manalan and B. B. Harvey, Indianapolis.—p. 1007.
Syndrome Simulating Diabetes Insipidus in Dogs Induced by Desoxycorticosterone Acetate: Clinical Observation of Syndrome with Addition of Tetany. R. C. Moehlig and L. Jaffe, Detroit.—p. 1009.
*Effect of Pitressin on Renal Circulation and Urine Secretion. K. G. Wakim, J. F. Herrick, E. J. Baldes and F. C. Mann, Rochester, Minn.—p. 1013.
Silicon in Nonsilicotic Lungs: Its Relation to Apical Scars and to Nodules. G. J. McHeffey, Rochester, Minn.—p. 1023.
Food Remnants as a Cause of Confusion in the Diagnosis of Intestinal Parasites. Nadene Denison, New Orleans.—p. 1036.
Pathologic Tissue Changes Produced by Sulfathiazole and Sulfathiazoline in Rabbits. J. A. Kolmer, Philadelphia.—p. 1043.
Sulfanilamide for Treatment of Gonorrhea of the Anal Canal. R. Turell, New York, with the technical assistance of Miriam Green.—p. 1046.
Bacterium Coli Anaerogenes Septicemia: Report of Case with Recovery. H. J. Flax and F. W. Shaw, Richmond, Va.—p. 1048.
Antagonism Between Anesthetic Steroid Hormones and Pentamethylenetetrazol (Metrazol). H. Selye, Montreal, Canada.—p. 1051.
Plasma Proteins in Therapeutic Fever. I. Kopp, Boston.—p. 1054.
"Electrocardiographic Anagrams": Method of Teaching Electrocardiography. J. E. F. Riseman, Boston.—p. 1063.
Simple Method of Evaluating Blood Platelets. E. W. Pernokis, Chicago.—p. 1069.
Shaking Device Used in Collection of Blood for Transfusion. L. W. Diggs and H. B. Turner, Memphis, Tenn.—p. 1070.
Relationship of Plasma Proteins to the Corrected Sedimentation Rate. I. Kopp, Boston.—p. 1072.
Dehydration in Embalmed Specimens Exposed to Air. F. L. Hansen and N. C. Pervier, Minneapolis.—p. 1078.
Use of SS (Shigella-Salmonella) Agar for Isolation of Flexner Dysentery Bacilli from the Feces. H. M. Rose and M. H. Kolodny, New York.—p. 1081.
Note on the "Black Line" in Hematocrit Determinations. J. P. Baumberger, Stanford University, Calif.—p. 1084.
A Microbiologic Assay Method for Six B Vitamins Using Lactobacillus Casei and a Medium of Essentially Known Composition. M. Landy and Dorothy M. Dicken, Chagrin Falls, Ohio.—p. 1086.
On the Determination of Urinary Cholesterol. M. Bruger and Sylvia B. Ehrlich, New York.—p. 1093.
Improved Pyknometer for Blood Serum. R. A. Mortensen, Loma Linda, Calif.—p. 1096.
Wax-Resin Compositions for Moulage Making. C. D. Clarke, Baltimore.—p. 1098.

Sulfonamides in Gonorrheal Urethritis in the Male.—According to La Towsky and his collaborators, sulfanilamide is no longer indicated in gonococcic infections since the later sulfonamides have been introduced. The sulfonamide derivatives sulfapyridine, sulfathiazole and sulfadiazine have been found to be effective in the treatment of gonorrheal urethritis in the male. Of 199 patients who presented themselves for treatment at the genitourinary clinic of the Philadelphia General Hospital

during the years 1939 to 1941, 167 were followed to the completion of the study. Ninety-three and five-tenths per cent of these were cured. The rate of cure was 92 per cent for sulfapyridine, 96 per cent for sulfathiazole and 93 per cent for sulfadiazine. The average dose required was 23.5 Gm. for sulfapyridine, 28 Gm. for sulfathiazole and 17.5 Gm. for sulfadiazine in eight days. Toxic reactions occurred in 75 per cent of cases treated with sulfapyridine, in 11.5 per cent with sulfathiazole and in 8.8 per cent with sulfadiazine. The average time for the discharge to disappear was three days with sulfapyridine, three days with sulfathiazole and four days with sulfadiazine. The average time for a bacteriologic cure based on the appearance of the first negative culture of the prostatic fluid was fifty-one days for sulfapyridine, twenty-eight days for sulfathiazole and thirteen days for sulfadiazine. The "carrier state" so called (the period from the disappearance of symptoms to the last culture of the prostatic fluid known to contain living gonococci) averaged seventeen days for sulfapyridine, seventeen days for sulfathiazole and three days for sulfadiazine. The criteria of cure in this study were strict and included as the final provocative test two or more negative smears and cultures of the prostatic fluid. Sulfadiazine is a valuable drug in the treatment of gonorrheal urethritis in the male, because it has a high cure rate and a low incidence of toxicity; it causes the prostatic fluid to become free from living gonococci sooner than any of the other sulfonamides. Sulfathiazole is very effective therapeutically and causes few toxic reactions. Sulfapyridine would better not be used in the treatment of gonorrhea in the ambulatory patient. It is effective therapeutically, but it gives rise to many and severe toxic reactions.

Effect of Pitressin on Renal Circulation and Urinary Secretion.—Wakim and his associates describe attempts to demonstrate the alterations in the glomerular tufts of capillaries and other vessels in the frog kidney, as seen under the microscope, and the changes in renal blood flow in the dog kidney under the influence of pitressin when administered through the various possible routes under similar conditions. The preparation used was pitressin in ampules (1 cc. = 20 units). The data presented justify the conclusion that the same preparation of pitressin administered under identical conditions into the same animal produces different effects on the renal blood flow, depending primarily on the route of administration. Subcutaneously administered it produces slight, if any, change in the blood flow. Intramuscular injections give variable results, possibly dependent on the vascularity and activity of the area involved and its influence on the rate of absorption. Intravenously administered pitressin invariably decreases the blood flow; caution regarding its intravenous use may aid in the prevention of untoward effects.

Journal of Pediatrics, St. Louis

20:537-664 (May) 1942

Classification of Eczematoid Eruptions in Children, with Special Reference to Contact Dermatitis. L. W. Hill, Boston.—p. 537.

Spontaneous Acidosis in Premature Infants: Clinical Report. A. McBryde and W. S. Branning, Durham, N. C.—p. 549.

*Pathogenesis of Chorea. D. N. Buchanan, A. E. Walker and T. J. Case, Chicago.—p. 555.

Sodium Sulfathiazole Clearance as Measure of Renal Function in Children. K. Kato, Chicago.—p. 576.

Oxycephaly: Results of Treatment by the King "Morcellation" Method. B. Woodhall, Durham, N. C.—p. 585.

Bacillary Dysentery in Infants and Children: Evaluation of Three Mediums, Sodium Desoxycholate Citrate, S-S and MacConkey's for the Isolation of Shigella Paradysenteriae from Stools. M. L. Cooper, Helen M. Keller and Lillian R. B. Glesne, Cincinnati.—p. 596.

*Renal Thrombosis in Infancy: Report of Two Cases in Male Infants Urologically Examined and Cured by Nephrectomy at Thirteen and Thirty-Three Days of Age. M. F. Campbell, New York, and W. F. Matthews, Montclair, N. J.—p. 604.

Human Milk Technology. C. A. Smith, Boston.—p. 616.

Comparison of Gentian Violet and Hexylresorcinol in Treatment of Pinworm Infestation. H. L. Evans and H. Moore, Dallas, Texas.—p. 627.

Neurofibromatosis of the Bladder in a Nine Year Old Boy. T. S. Chalkley and J. W. Bruce, Louisville, Ky.—p. 632.

Pathogenesis of Chorea.—Buchanan and his associates examined the brains of 2 patients who died while suffering from acute rheumatic chorea. Many cases of chorea have shown at necropsy gross lesions of the basal ganglions. Such lesions have been so well circumscribed that it has been possible by correlating the predominant clinical involvement with the site of the pathologic lesion to deduce a somatotropic localization within the striatum. Such discrete involvement is rarely seen in choreas of childhood; it occurs in the arteriosclerotic or senile choreas. The pathologic substrate of chorea is to be found in many different parts of the central nervous system. The authors are inclined to believe that the cerebral cortex plays a fundamental role in the production of choreic movements. In favor of this thesis is the abnormal activity of the electroencephalogram. The motor area is probably the region directly responsible for the production of the choreic movements. The changes in the brains of choreic patients, however, are not confined to the cerebral cortex. The cerebellum, its efferent pathways, the striatum and the thalamus are frequently affected. There is evidence of at least two circuits impinging on the motor cortex and playing an important part in its normal function. They are the corticopontocerebellodentatorubrothalamocortical and the corticostriothalamocortical circuits. There is a constant stream of impulses passing through both of these nerve circuits, even when the organism appears to be at rest. At least two subcortical circuits may modulate the activity of the motor cortex. In addition, the cortex of the postcentral gyrus and of other parts of the cerebrum influences the activity of the motor area. It is thus apparent that by modifying the influence of any of these mechanisms the motor cortex may be made abnormally sensitive and responsive to what would ordinarily be subliminal stimuli. The presence of lesions in the cerebellum and its efferent pathway, the thalamus, and the striatum must interfere with these modulating circuits and conceivably could make the motor cortex abnormally sensitive. It does not seem probable, however, that such lesions furnish the stimulus setting off the abnormally sensitive cortex. There must be another factor influencing the production of the motor phenomena of chorea. The authors suggest that the cerebral cortex is the level at which the movements of chorea originate, but they believe that these abnormal movements occur only when the motor cortex is hyperexcitable congenitally or because of lesions in physiologic arcs or circuits which normally modulate the activity of the cerebral cortex.

Renal Thrombosis in Infancy.—According to Campbell and Matthews, renal thrombosis in infants and children is an exceedingly grave condition and terminates fatally in practically every case not promptly treated surgically. In infants, ileocolitis is the chief predisposing cause; the initial renal lesion in most cases is a massive hematogenous acute pyelonephritis. The precise factor or factors engendering the early intrarenal lesion are unknown. The authors present 2 case reports. In case 2 the prothrombin level was strikingly low (one minute and ten seconds) and there is reason to believe that the level was correspondingly low in case 1. Yet in each instance a high prothrombin level was rapidly achieved by the administration of vitamin K. The authors present the clinical manifestations and say that in a large portion of the cases adequate urologic study should establish the urgent surgical nature of the condition; in some the correct diagnosis will be made preoperatively. When the disease is unilateral, the child not hopelessly septic and prompt nephrectomy employed, about 75 per cent may be expected to survive. In the 2 male infants the subject of this report, cystoscopy, divided renal function tests and retrograde pyelography were carried out in the early days of life and shortly after the onset of the disease. Both were cured by nephrectomy.

Journal of Pharmacology & Exper. Therap., Baltimore

74:335-416 (April) 1942. **Partial Index**

Action of Papaverine on Heart of Dog. S. R. Elek and L. N. Katz, Chicago.—p. 335.

Action of Phenylcinchoninic Acid in Preventing Experimentally Produced Convulsions in Rabbits. L. J. Pollock, I. Finkelman and E. L. Tigay, Chicago.—p. 365.

Activity of Derivatives of Curare as Prepared in Liquid Ammonia. R. G. Roberts, R. A. Hecht and A. W. Jackman, Chicago.—p. 392.

Mixed Color Dithizone Method for Determination of Bismuth in Biologic Material. E. F. Kluchesky, B. J. Longley and F. L. Kozelka, Madison, Wis.—p. 395.

Pharmacologic and Toxicologic Studies on Cetylpyridinium Chloride: New Germicide. M. R. Warren, T. J. Becker, D. G. Marsh and R. S. Shelton, Cincinnati.—p. 401.

Journal of Urology, Baltimore

47:535-750 (May) 1942. **Partial Index**

Diverticulum of Ureter: Collective Review with Report of Unique Example. E. H. Richardson, Baltimore.—p. 535.
Respiration Pyelography in Diagnosis of Perinephric Abscess. L. E. Pierson and E. M. Honke, Sioux City, Iowa.—p. 580.
Retention of Urine of Neurogenic Origin: Relief by Subcutaneous Injection of Pilocarpine Hydrochloride. M. Scott, Philadelphia.—p. 582.
Pellet Implantation of Hormones in Urology. W. M. Kearns, Milwaukee.—p. 587.
Urinary Obstruction of Vesical Neck and Posterior Urethra of Congenital Origin. G. J. Thompson, Rochester, Minn.—p. 591.
*Clinical Studies on Relationship Between Renal Disease, Renal Function and Arterial Blood Pressure. R. H. Flocks, Iowa City.—p. 602.
*Example of Apparent Healing of Bilateral Minimal Renal Tuberculosis. C. D. Creevy, Minneapolis.—p. 614.
Retroperitoneal Tumors Influencing Kidneys and Ureters. T. H. Sweetser, Minneapolis.—p. 619.
Surgery in Polycystic Disease of Kidney. H. C. Rolnick, Chicago.—p. 648.
Fibroma of Ureter. C. J. Cooney, Fort Wayne, Ind.—p. 651.
Adenocarcinoma of Urinary Bladder: Report of One Case. A. G. Fleischman and E. L. Mauritz, Des Moines, Iowa.—p. 658.
Vesical Calculus: Clinical Study Based on 250 Cystolithotripsies and 132 Cystolithotomies. R. J. Prentiss, Iowa City.—p. 664.
Late Ureterointestinal Anastomosis Complication: Case Report. L. W. Riba, Chicago.—p. 679.
Urologic Complications of Carcinoma of Cervix. W. L. Valk, Ann Arbor, Mich.—p. 686.
Simplified Concept of Dehydration. J. W. Nadal, Ann Arbor, Mich.—p. 692.
Urinary Calculus Associated with Pregnancy: Consideration of Management with Report of Three Cases. J. F. Balch, Indianapolis.—p. 705.
Some Urologic Phases of Vesicovaginal Fistula. V. S. Counseller, Rochester, Minn.—p. 711.

Renal Disease and Arterial Blood Pressure.—Flocks studied the urinary tracts of 38 patients with congenital hydronephrosis, infected hydronephrosis, renal stone and hypertension by means of flat film, pyeloureterogram and phenolsulfonphthalein and urea excretion from the individual kidneys. By comparing the results with normal values he estimated the amount of bilateral ischemia present. In 23 subjects there was a decided systolic and diastolic elevation of the blood pressure. The urinary tracts, from the point of view of the flat film and the pyelogram, of 14 were perfectly normal, 4 presented somewhat smaller kidneys than normal bilaterally, 2 showed unilateral small kidneys, 1 showed a slight hydronephrosis on one side and slight pyelonephritis on the other, 1 showed a stone in the left kidney pelvis and 1 showed a mild hydronephrosis on the right side. Renal changes were extremely minor compared to the functional impairment. Of the 23 patients, 6 showed unilateral renal ischemia, 14 bilateral renal ischemia and only 3 normal function bilaterally with no demonstrable ischemia. Removal of the ischemic kidney of 2 patients with a relatively definite unilateral ischemia resulted in a return of the blood pressure to normal. One of the 38 patients had paroxysmal hypertension with no anatomic or functional renal abnormality. Of 8 patients with a systolic blood pressure of less than 140 and a diastolic pressure of less than 90 none had any evidence of renal "ischemia." Two of the 8 showed no renal disease, 2 showed congenital hydronephrosis, 1 had bilateral branching renal calculi, 1 had extensive infected hydronephrosis bilaterally, 1 had a stone in the right kidney pelvis and 1 had a mild pyelonephritis bilaterally. Although the incidence of renal disease was higher in this group than in the group with hypertension, the impairment of phenolsulfonphthalein excretion corresponded to the anatomic damage as demonstrated by the flat film and pyelogram. The remaining 6 patients had blood pressures which ranged between 145 and 170 systolic and 80 to 95 diastolic. In only 1 of them was there definite evidence of extreme impairment of phenolsulfonphthalein excretion as compared to renal substance.

Bilateral Minimal Renal Tuberculosis.—Creevy reports a case of minimal bilateral renal tuberculosis, proved by pyelography and guinea pig inoculation, which has apparently healed on a regimen of good sanatorium care. He does not seriously propose that frankly destructive unilateral renal tuberculosis without active disease elsewhere be treated conservatively but wishes to point out that the possibility of healing exists. The patient continues to be well eleven years after the apparent onset and ten years after the last demonstrable bacteriologic evidence of activity. Calcium has been deposited in the area of destruction on one side.

Military Surgeon, Washington, D. C.

90:481-608 (May) 1942

Alcoholism: Some "Causes" and Treatment. M. Moore.—p. 481.
Medical Service of a Square Division—One Year of Active Duty. L. A. Salisbury.—p. 496.
*Wound Therapy, with Special Reference to Application of Carbamide-Sulfonamide Mixtures to Contaminated and Infected Wounds. H. G. Holder and E. M. MacKay.—p. 509.
Causes and Prevention of Weak Feet. T. Hale Jr.—p. 518.
Use of Bone Grafts in Reconstructing the Mandible. R. J. Fallis.—p. 535.
Low Back Pain and the Needle. E. A. Brav and H. Sigmond.—p. 545.
*Traumatic Fat Embolism. W. H. Gerwig Jr.—p. 549.
Nature's Way: I. Military Effectiveness. V. Safford.—p. 556.
Bacterial Warfare: Use of Biologic Agents in Warfare. L. A. Fox.—p. 563.

Wound Therapy with Carbamide-Sulfonamide Mixtures.—According to Holder and MacKay, five fundamental principles are pertinent in wound therapy: (1) control of hemorrhage, (2) rest and immobilization, (3) infection, (4) blood supply and (5) elimination of necrotic tissue. Symmers and Kirk first used urea successfully in the treatment of infected war wounds during the first world war. Because of the unsatisfactory connotation to some of the term urea, and because of the appearance of this substance in urine, the authors have chosen to use its synonym carbamide. A five year trial involving every type of contaminated and infected wound confirmed the observations of Symmers and Kirk as to the harmlessness of carbamide to normal tissues. Its use in relatively avascular tissue, as in tendon sheath infection and in primary tendon suture, demonstrated its nonirritating character. Animal experiments revealed no instance of damage to normal healthy tissue cells. The healthy quality of granulation tissue produced by carbamide therapy is especially favorable for subsequent successful skin grafting. In foul smelling infections the deodorizing effect of carbamide is important. The rate of healing is not retarded in any wound and is improved in grossly infected wounds. Carbamide action rids the wound of necrotic tissue and thus of sulfonamide inhibitors. The hypertonic action of carbamide produces a maximum cellular defense reaction resulting in diapedesis of phagocytic elements. The sulfonamide component exerts a maximum bacteriostatic action. Sulfanilamide was mixed with carbamide so as to represent 10 per cent of the mixture. The authors feel that in the treatment of traumatic wounds, especially war wounds, under the difficult conditions of combat the more simple and more efficient treatment should command attention. The carbamide-sulfanilamide mixture meets these requirements. Any one trained in first aid work may apply it. The mixture is stable, not bulky and easily carried. It can be universally applied to all types of wounds either in crystal form or as a saturated solution for irrigation. Application of the crystals to wounds is rarely necessary more than once in twenty-four hours, thereby reducing the amount of necessary care, materials and trauma to the wound, giving the patient the maximum of rest and comfort. The use of sterile wax paper as the first layer of a dressing still further simplifies dressings and reduces wound trauma.

Traumatic Fat Embolism.—Gerwig reviews the salient features of fat embolism in man and reports 9 traumatic cases from the records of the University Hospital, Baltimore. In 1 of the 9 cases death was due to a nonsaponifying mineral oil that had been instilled into the urethra to facilitate the passage of a catheter. The remainder of the cases were all instances of true fat embolism, with recovery in 2. The author believes that trauma of some sort was the causative factor in every case. He classifies the mode of production as follows: A. Traumatic. 1. Bones (*a*) fractures, separations or dislocations, (*b*) concussion, jarring or operations on bone. 2. Soft tissue (*a*) lacerations in fat, fatty viscera or in the presence of oil, (*b*) childbirth. B. Nontraumatic. In cases of trauma presenting unexplained fever, shock, coma, dyspnea, congestion, fall in hemoglobin and urinary changes and in all cases of fractures, especially of the long bones, fat embolism should be looked for. Diagnostic methods include staining of sputum and urine for fat, hemo-

globin determination and ophthalmoscopic examination for fat in the retinal vessels. Chest roentgenograms may become valuable in the future. Prophylactic or curative treatment is not specific and is confined to symptomatic and palliative care.

New England Journal of Medicine, Boston

226:671-706 (April 23) 1942

*Volkmann's Ischemic Contracture: Analysis of Its Proximate Mechanism. P. S. Foisie, Boston.—p. 671.
Cirrhosis of the Liver Complicated by Persistent Right Hydrothorax and Ascites: Report of Unusual Case. J. R. Frothingham, Boston.—p. 679.
Argyria Confused with Heart Disease. S. A. Levine and J. A. Smith, Boston.—p. 682.
Hemothorax Complicated by Infection with Clostridium Welchi. J. P. Lynch and J. W. Strieder, Boston.—p. 685.
Chemical Measurement and Control of Clinical Vitamin Deficiency (Concluded). W. T. Salter, New Haven, Conn.—p. 688.

Volkmann's Ischemic Contracture.—Evidence is presented by Foisie that Volkmann's ischemic contracture is not a complication of an improperly treated supracondylar fracture of the humerus but is the result of ischemic infarction produced by segmentary arterial spasm of the main artery to an extremity, with reflex spasm of the collateral circulation. Thus a subtotal ischemia is produced and the bellies of muscles which have the greatest demand for arterial blood, and therefore are the most vulnerable to this loss, are the first affected. Gangrene of the fingertips or partial or even complete gangrene of the extremity would result if this spasm continued in sufficiently severe degree; but, when Volkmann's contracture is the only result, some improvement in the arterial supply intervenes. This vasomotor activity is controlled by the sympathetic nervous system. Initially the lesion in acute cases is one of impaired circulation. In old cases with an established deformity the normal blood supply has returned and the problem is to correct existing deformity by physical therapy, tendon lengthening, bone shortening and the like.

New York State Journal of Medicine, New York

42:833-928 (May 1) 1942

Treatment of Head Injuries. F. W. Geib, Rochester.—p. 863.
Treatment of Fractures of the Spine With and Without Neural Injury. J. Browder and R. Grimes, Brooklyn.—p. 866.
Treatment of Injuries to the Abdomen. F. Beekman, New York.—p. 873.
Treatment of Hypertrichosis by Electrocoagulation. C. Lerner, New York.—p. 879.
Obstetric Problems Arising from Excessive Size of the Infant. K. M. Wilson, Rochester.—p. 883.
Treatment of Ethmoiditis. J. R. Honiss, Rochester.—p. 887.

Public Health Reports, Washington, D. C.

57:553-600 (April 17) 1942

Distribution of Health Services in Structure of State Government: IV. Venereal Disease Control by State Agencies. J. W. Mountin and Evelyn Flook.—p. 553.
New Base for Protective Ointment for Prevention of Poison Ivy Dermatitis. L. Schwartz, J. E. Dunn and F. H. Goldman.—p. 578.
Disabling Morbidity Among Industrial Workers, Final Quarter of 1941. W. M. Gafafer.—p. 588.

57:601-640 (April 24) 1942

Cadmium Poisoning. Division of Industrial Hygiene.—p. 601.
*Epidemic of Boils in a Group of Tunnel Workers. J. Q. Gant, R. J. Owens and L. Schwartz.—p. 612.
Sanitation Activities in Southeastern States in Connection with National Defense. E. C. Sullivan and J. S. Wiley.—p. 617.
Frequency and Duration of Disabilities Causing Absence from Work Among Employees of a Public Utility, 1938 to 1941. W. M. Gafafer.—p. 625.

Epidemic of Boils in a Group of Tunnel Workers.—Gant and his associates state that since February 1941 there has been an epidemic of boils among the workers of the Carlton Tunnel, Cripple Creek, Colo. In about five months 22 workmen gave up work because of boils. Most of the lesions were on the wrist and neck. They were, as a rule, deep seated nodules with a fluctuant central mass and an area of erythema in the adjacent skin. Many of the lesions had broken down or had been incised by the company physician and were exuding thick, yellow pus. Several were typical carbuncles with numerous openings from which purulent material was discharging. Fourteen different jobs are involved in tunneling, but the majority of boils occurred among seven jobs entailing the greatest contact with water, rock dust, perspiration and friction from working clothes. Study revealed that the cause of the outbreak was a combination of these factors, which lower the resistance of the skin to pyogenic bacteria. Prevention can be obtained by having adequate, usable bathing facilities, enforced bathing after work, daily change of work clothes, individual raincoats, rubber boots, safety hats, respirators and neck towels, daily washing of the rubber clothing, sanitary toilet facilities in the tunnel and early medical aid if boils appear in spite of these preventives; the men should not use adhesive tape on the skin, as its removal pulls out the hairs and opens hair follicles, which become new ports for infection.

South Carolina Medical Assn. Journal, Florence

38:109-136 (May) 1942

Pilonidal Cyst. D. F. Adcock, Columbia.—p. 109.
Treatment of Hypertension—Thiocyanate in a Normal Person. J. T. Quattlebaum, Columbia.—p. 112.

Southern Medical Journal, Birmingham, Ala.

35:425-540 (May) 1942. **Partial Index**

Late Results of Plastic Surgery in Hydronephrosis. T. D. Moore, Memphis, Tenn.—p. 425.
Cutaneous Tuberculosis and Related Diseases in the Southern Negro. C. B. Kennedy, J. K. Howles, V. M. Henington and M. E. Kopfler, New Orleans.—p. 449.
Management of Patients with Hypertension. H. M. Doles, Norfolk, Va.—p. 461.
*Treatment of Epidemic Meningitis (Cerebrospinal Fever): Results in 115 Cases, with Special Reference to the Fallacy of Intraspinal Therapy. C. J. Tripoli, New Orleans.—p. 472.
Study of Intestinal Parasites in Relation to Excreta Disposal Facilities in Cocke County, Tenn., 1940. C. B. Tucker, Nashville, Tenn., and J. M. Chisolm, Washington, D. C.—p. 476.
Pharmacology of the Sulfonamide Drugs. S. M. Rosenthal, Washington, D. C.—p. 484.
Clinical Observations Using Certain Factors of the Vitamin B Complex as Therapeutic Agents in Ophthalmology. W. B. Clark, New Orleans.—p. 489.
Treatment of Glaucoma Simplex. C. S. O'Brien, Iowa City.—p. 498.
Subdiaphragmatic Sympathectomy for Essential Hypertension. J. W. Hendrick, Amarillo, Texas.—p. 501.
*Glossopharyngeal Neuralgia. R. G. Spurling and E. G. Grantham, Louisville, Ky.—p. 509.
Experiences in Treatment of Burns. J. D. Martin Jr., Atlanta, Ga.—p. 513.
Endometriosis: Problem of Treatment. R. T. Stephenson and P. Graffagnino, New Orleans.—p. 525.
The Nicola Operation for Recurrent Dislocation of the Shoulder: Review of Twenty-Six Cases. R. B. Raney, Durham, N. C., and O. L. Miller, Charlotte, N. C.—p. 529.
Hypertension in Train and Engine Service. G. P. Myers, Detroit.—p. 532.

Treatment of Epidemic Meningitis.—From January 1935 to July 1940, 97 cases of epidemic meningitis were treated with antiserum, antitoxin and sulfanilamide either alone or in conjunction with one another. Tripoli reports that the effect of omitting intraspinal therapy was striking: of 70 patients given intraspinal therapy of one form or another 28 died and of 25 not receiving intraspinal therapy only 1 died. The combined use of antitoxin and sulfanilamide gave better results than either agent alone. Serum therapy, regardless of the type, did not give nearly as good results as either antitoxin or sulfanilamide. Of 18 patients given a sulfonamide derivative orally and specific antitoxin intravenously between July 1940 and October 1941 none died. Sulfanilamide was used in 4, sulfathiazole in 3 and sulfapyridine in 11. Five of the 18 were treated only with the sulfonamides orally. All the 18 patients recovered satisfactorily and were discharged after twelve to twenty-three days of hospitalization.

Glossopharyngeal Neuralgia.—Spurling and Grantham encountered a patient with a severe neuralgia of the throat and the ear with two sharply defined trigger points: the tonsillar fossa and the external auditory canal. The data in the case indicate that the trigger points in the ear and in the throat were separately innervated, as complete cocainization of the throat failed to change the irritability of the trigger zone in the ear. Sectioning the glossopharyngeal nerve and the upper two strands of the vagus relieved the glossopharyngeal neuralgic pain completely and permanently. This demonstrates that the pain of glossopharyngeal neuralgia with trigger points in the throat and the lateral surfaces of the external ear is not relieved by a glossopharyngeal section alone.

Southwestern Medicine, El Paso, Texas

26:103-140 (April) 1942

*Congenital Dislocation of the Hip (Its Incidence in New Mexico). F. C. Goodwin and D. M. Cameron, El Paso, Texas.—p. 105.
Correlation of the Pathology of Coronary Occlusion. J. P. Simonds, Chicago.—p. 108.
Stasis as Factor in Chronicity of Nonspecific Upper Urinary Tract Infections. H. Culver, Chicago.—p. 113.
Psychoneurosis in General Practice. J. W. Myers, Albuquerque, N. M. —p. 116.
Hormone Therapy in Gynecology. H. H. Brainard, Tucson, Ariz.—p. 121.

Surgery, Gynecology and Obstetrics, Chicago

74:905-1032 (May) 1942. **Partial Index**

Modern Management of Cancer of the Lower Gastrointestinal Tract. F. W. Rankin, Lexington, Ky.—p. 905.
*Treatment of Patients with Severe Burns. H. S. Allen and S. L. Koch, Chicago.—p. 914.
Invert Sugar as Substitute for Glucose in Intravenous Therapy. S. E. Kerr, Newark, Del., and R. J. Pauly, Beirut, Republic of Lebanon. —p. 925.
Factors Influencing the End Results in Carcinoma of the Ovary: Report of a Series of 138 Patients Treated from 1910 to 1935. H. C. Taylor Jr. and A. V. Greeley, New York.—p. 928.
Fractures of the Forearm: Some Technical Procedures. A. L. Murphy, Halifax, N. S., Canada.—p. 935.
Thoracoscopy and Pneumonolysis: Observations on One Hundred Consecutive Cases. L. Carp and B. A. Kornblith, New York.—p. 939.
*Continuous—Serial, Fractional, Controllable, Intermittent—Spinal Anesthesia: Observation on 1,000 Cases. W. T. Lemmon and G. W. Paschal Jr., Philadelphia.—p. 948.
Total versus Subtotal Hysterectomy for Benign Conditions. D. A. McKinnon Jr. and V. S. Counseller, Rochester, Minn.—p. 957.
Study of the Mechanics of Bile Flow: III. Responses to Pharmacologic Stimuli. D. D. Kozoll and H. Necheles, Chicago.—p. 961.
Appendical Obstruction in the Noninflamed Appendix. W. B. Murphy, New York.—p. 968.
Contrast Mediums in Cysts and Abscesses of the Cerebral Hemisphere. E. A. Kahn, Ann Arbor, Mich.—p. 983.
So-Called Lateral Aberrant Thyroid Tumors. W. L. M. King and J. deJ. Pemberton, Rochester, Minn.—p. 991.
Removal of the Regional Lymph Nodes in Cancer of the Body of the Uterus. H. W. Johnston, Toronto, Canada.—p. 1002.
Anesthesia in Cases of Poor Surgical Risk: Some Suggestions for Decreasing the Risk. R. C. Adams and J. S. Lundy, Rochester, Minn.—p. 1011.
Studies of the Analeptics: II. Metrazol. R. W. Whitehead and W. B. Draper, Denver.—p. 1020.

Treatment of Patients with Severe Burns.—According to Allen and Koch, the surgical principles in treating burns are (1) to prevent and combat shock, (2) to convert the open contaminated wound into a clean wound, (3) to cover the open wound by the simplest possible dressing that protects it from constant reinfection, does not fix or destroy any remaining viable skin or subcutaneous tissue, provides for drainage of the serum that exudes from the burned surface until this is checked by pressure or normal coagulation, exerts a uniform moderate pressure over the burned area and that can be easily removed, (4) to keep the injured part at rest and (5) to secure healing in the least time and with a minimal loss of function. The initial shock is due to pain, fright and overexertion; it is often soon followed by secondary shock resulting from loss and shifting of body fluids. If, in spite of every effort to prevent loss of body fluid, shock and collapse develop, replacement fluids are life saving. Thirst, restlessness and a rapid pulse rate are constant and important signs of fluid loss and indicate the need for the prompt administration of plasma. The administration of oxygen, particularly to patients with burns of the face and chest, is a valuable adjunct to treatment. The most important source of infection of a burned surface is from the open mouth and uncovered nose of a person working over the injured patient. Infection can be prevented almost always if the patient is seen promptly after injury and if he has not received extensive or prolonged "first aid" treatment. The simplest and safest method of converting an open contaminated wound into a clean wound is by gentle, thorough cleansing with plain white soap and sterile water applied with gloved hands under eyes that are alert and mouth and nose that are carefully masked. After the injured surface has been cleansed it is covered with a few layers of fine meshed sterile gauze impregnated with petrolatum. This dressing does not adhere and does not fix tissue, but it permits drainage of serum and exudate into the dressings outside it. Over the petrolatum gauze a half dozen layers of flat dry sterile gauze are laid and over this mechanic's waste or sea sponges to provide a resilient covering under retention bandage furnishing even pressure without constriction. Uninterrupted and enforced rest of injured tissues is an important and essential part in the treatment of severe burns. The authors conclude that it is neither logical nor wise to substitute for a safe and tested method an elaborate time consuming procedure which involves the use of powerful chemicals concerning whose possibilities for harm there still is doubt.

Continuous Spinal Anesthesia.—Lemmon and Paschal present a statistical report on their first thousand cases of continuous spinal anesthesia. They used procaine hydrochloride because it is the least toxic of all drugs used in producing anesthesia by injection into the subarachnoid space. This anesthesia is maintained as long as necessary by adding subsequent small doses. Thus spinal anesthesia has been changed from the "single dose" to the "fractional dose" method and it is placed in the same category as other anesthesias administered by the continuous or fractional dose method. The operations in 970 cases were below the diaphragm and in 30 above it. The average length of the operations was fifty and four-tenths minutes, with extremes of two hundred and fifteen minutes for a total gastrectomy to only about two minutes for the incision and drainage of an abscess. The average total dose of procaine hydrochloride was 219.9 mg. In the operations done above the diaphragm the general average was 445 mg. The largest dose given to any patient was 2,200 and the smallest 20 mg. Various dilutions from 1 to 10 per cent solutions were used. The blood pressure was recorded every five minutes. Soon after the patient received the preliminary injection of ephedrine sulfate and procaine hydrochloride to anesthetize the skin and support the blood pressure there was a general elevation of the blood pressure. After the operation was in progress, the pressure tended to become constant or to fall below that at the onset. The average high blood pressure was 129.9 and the average low 103.4. In several instances the blood pressure fell to a systolic of 40 mm. The authors rarely use vasoconstrictors in these conditions but have found that venoclysis or blood transfusion affords the best relief. The incidence of headache after spinal anesthesia was 2.8 per cent, which approximates that seen after the single injection method. In most instances this complaint was relieved by acetylsalicylic acid or by lowering the patient's head. The incidence of urinary retention was 3.4 per cent; that is, it was no more frequent than with the ordinary method of spinal anesthesia. There were 34 cases of pulmonary complications: 19 bronchopneumonia, 9 lobar pneumonia, 4 atelectasis and 2 pulmonary embolism. There were no motor or sensory disturbances, no cranial nerve palsies or other neurologic phenomena. Of the 47 patients who died (4.7 per cent) 24 had malignant growths, 9 died from diffuse peritonitis and the other contributing factors causing death were pulmonary, cardiac and renal conditions. In a total of more than 2,000 known cases there has not been a death from continuous spinal anesthesia.

Virginia Medical Monthly, Richmond

69:235-290 (May) 1942

*Use of Sulfanilamide in Compound Fractures. F. F. Davis, Roanoke. —p. 237.
*Diphtheria in a Nutrition Camp: I. Epidemiology, Immunology and Public Health Study. V. A. Turner, Staunton.—p. 241.
Id.: II. Treatment of Twenty-Eight Cases of Diphtheria. B. H. Payne, Staunton.—p. 246.
Present Day Concepts of Cancer of the Cervix. J. L. Rawls, Norfolk. —p. 249.
Some Aspects of Suicide. P. H. Drewery Jr., Richmond.—p. 252.
From the Country Side. R. J. Walker Jr., Snow Hill, N. C.—p. 256.
Obesity—Cause, Handicap and Treatment: Review. J. Hundley Jr., Lynchburg.—p. 261.
Syphilis of the Lung: Report of Three Cases. J. D. Kernodle, Wichita Falls, Texas; W. E. Pembleton and P. P. Vinson, Richmond.—p. 267.
Empyema in the Newborn: Case Report. M. Birdsong, University.—p. 271.
Treatment of Peripheral Vascular Disease. N. Bloom, Richmond.—p. 273.

Sulfanilamide in Compound Fractures.—From Nov. 1, 1940 to Nov. 1, 1941 Davis and his associates treated 30 compound fractures by implantation of sulfanilamide powder and primary closure of the wounds. Injured nerves and tendons were repaired if the patient's condition permitted. No other

sutures were used except in the skin. The edges of the skin wound were approximated without the use of drains. If an accurate reduction could not be maintained, the authors did not hesitate to use internal fixation. Appliances made of vitallium were preferred whenever possible. The wounds in 28 of the 30 compound fractures have healed by primary intention. In 2 cases local infection developed. There was no systemic evidence of infection in either of these cases. In 1 case infection was confined to the soft tissues and in the other a localized osteomyelitis developed. There were no cases of gas infection. The authors conclude that the mortality and morbidity following compound fractures can be lowered if the outlined treatment is followed in a routine manner.

Diphtheria in a Nutrition Camp.—Turner reports an outbreak of 28 cases of diphtheria in a children's nutrition camp which could not be controlled by the usual public health measures. The camp facilities and handling were known and fully approved before the outbreak (water, sewage disposal, screening, food handling, infirmary). A careful study of the outbreak was possible. 1. One hundred and sixteen (92.8 per cent) of the 125 children in this camp had previously had alum precipitated toxoid, negative Schick, or both. Twenty-six (22.4 per cent) of these contracted diphtheria. 2. The protection given by one dose of alum precipitated toxoid was less than that reasonably expected and previously noted when immunized school children have been exposed to diphtheria. 3. The negative Schick test was of little value in determining the state of immunity. The same applied whether the test was done in school one to two years previously or in camp before diphtheria developed, or both. 4. Exceptions to statements 2 and 3 were shown by all children having previously had their tonsils removed. Although there were 5 proved carriers among 25 of these children, none had diphtheria. Predilection for tonsillar tissue was exhibited, with 1 exception of diphtheritic conjunctivitis. 5. The organism was of the "gravis-like" type. The authors believe that they were dealing with a diphtheria germ which possessed or had developed increased virulence or increased invasive properties.

War Medicine, Chicago

2:381-542 (May) 1942

Psychiatric Problems in Military Aviation. R. B. Bigelow, Pensacola, Fla.—p. 381.
Injuries of Intervertebral Disk in Military Service. J. G. Love, Rochester, Minn.—p. 403.
Seasickness and Other Forms of Motion Sickness: I. General Review of Literature. D. McEachern, G. Morton and P. Lehman, Montreal, Canada.—p. 410.
Use of Direct Heat and Indirect Heat to Increase Blood Flow to the Extremities. G. de Takats and D. S. Miller, Chicago.—p. 429.
Army's Nutritional Problems. J. A. Tobey, New York.—p. 437.
Chemotherapy of Gonorrheal Urethritis in the Male with Sulfanilamide, Sulfapyridine and Sulfathiazole. H. A. Zide, Fort Ord, Calif., and I. Davis, Monterey, Calif.—p. 445.
Clinical and Subclinical Lead Intoxication. A. E. Abraham and J. A. Baird, Tallahassee, Fla.—p. 450.
Treatment of Penetrating Wounds of the Head, with a Critical Review of Recent Literature. A. E. Walker, Chicago.—p. 454.
Tilted Pelvis. L. E. Zimmerman, Milwaukee.—p. 465.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

50:225-270 (May) 1942

Surgical Approach to Meningiomas in Region of Sphenoid Ridge Causing Unilateral Exophthalmos. S. N. Berens, Seattle.—p. 225.
Management and Treatment of Pituitary Tumors. L. J. Adelstein, Los Angeles.—p. 230.
*Esophagopleural Fistulas: Case Report with Review of Literature. W. Cohen, Portland, Ore., and E. A. Sindell, Bethlehem, Pa.—p. 238.
Transduodenal Resection of Carcinoma of Ampulla of Vater. C. J. Baumgartner, Los Angeles.—p. 250.
Complete Situs Inversus Associated with Cholelithiasis. D. Metheny, K. K. Sherwood and B. Zimmerman, Seattle.—p. 254.
Study of Neonatal Mortality at the Jewish Hospital: Ten Year Study. B. Hark, Philadelphia.—p. 258.

Esophagopleural Fistulas.—Cohen and Sindell report the occurrence of a rupture into the esophagus of a patient undergoing treatment for a tuberculous empyema. The patient was a 30 year old white woman with tuberculosis of the left lung treated with pneumothorax for one year. The sputum became negative and refills were stopped. Six months later an empyema developed which could not be controlled by oleothorax or aspiration and irrigation. One year after the appearance of the fluid containing tubercle bacilli a variegated bacterial flora was recovered from the pleural exudate. Yeast cells were also found. An esophagopleural fistula was demonstrated by barium meal. A thoracotomy was performed and feedings were given by a stomach tube. Signs of intraperitoneal hemorrhage with bloody drainage from the thoracotomy tube soon developed, the patient dying three and three-fourths years after the onset of the disease, one year after the empyema developed, and one month after the esophagopleural fistula had formed. Postmortem disclosed an esophageal fistula at the level of the fourth dorsal vertebra, a healing cavity of the left upper lobe, disseminated miliary tuberculosis, a chronic left tuberculous empyema, multiple recent tuberculous ulcers of the esophagus around the fistula and perforation of the left dome of the diaphragm with intraperitoneal bleeding from splenic rupture. The immediate causes of death were disseminated miliary tuberculosis and intraperitoneal hemorrhage. Sixteen similar cases are reviewed from the literature. MacDonnell (1844) is credited with the first recorded case. The empyema was tuberculous in 7, nontuberculous in 6 and not stated in 4. The prognosis of esophagopleural fistula in chronic empyema is poor, but in acute nontuberculous empyema it is comparatively good. Of the 17 patients 10 died, 5 were cured, 1 was living at the time of the report and in 1 the final outcome was not mentioned. Treatment consists in preventing oral contamination of the pleural space, adequate drainage and obliteration of the empyema.

West Virginia Medical Journal, Charleston

38:167-200 (May) 1942

Role of the Home Physician in Control and Treatment of Tuberculosis. W. L. Cooke, Charleston.—p. 167.
Anesthesia, Operation and the Cardiovascular System. J. E. Wood Jr., University, Va.—p. 171.
Hydramnion with Unilateral Hydronephrosis of Fetus. G. Geyerhahn, Parkersburg.—p. 178.
Handling of Hearing Problems in General Practice. C. E. Kinney, Cleveland.—p. 180.
Perforating Duodenal Ulcer in a Youth of Sixteen: Case Report. D. C. Peters, Richwood.—p. 184.

Wisconsin Medical Journal, Madison

41:369-452 (May) 1942

Late Neurologic Complications of Injury to the Nervous System. H. W. Woltman, Rochester, Minn.—p. 385.
Cancer of Urinary Bladder: Analysis of Fifty-One Cases. J. B. Wear and H. H. Kohler, Madison.—p. 392.
Study of Two Hundred Deaths Associated with Cesarean Section, 1934 to 1940 Inclusive. W. C. Keettel, Madison.—p. 395.

Yale Journal of Biology and Medicine, New Haven

14:443-566 (May) 1942

Preventive Medicine and Health Promotion—Ideals or Realities? C.-E. A. Winslow, New Haven, Conn.—p. 443.
War Surgery of the Face and Head. W. J. German, New Haven, Conn.—p. 453.
Anomalous Single Azygos-Hemiazygos Vein Associated with Retroaortic Left Renal and Accessory Renal Veins. H. B. Hamilton and R. G. Meader, New Haven, Conn.—p. 463.
Observations on Histoplasmosis: Induced Infection in the Mouse. M. Tager and A. A. Liebow, New Haven, Conn.—p. 469.
Changes in Electrical Potential of Insect Pupae Prior to Emergence. P. V. Rogers, Clinton, N. Y.—p. 489.
Effects of Morphine on the Electrocardiogram of Man. W. W. Pettus, A. J. Geiger and S. T. Grzebien, New Haven, Conn.—p. 493.
Intestinal Obstruction Due to a Gallstone: Report of an Unusual Instance. S. C. Harvey and G. J. Connor, New Haven, Conn.—p. 501.
Biochemistry in Relation to Psychiatry. E. F. Gildea, New Haven, Conn.—p. 505.
Hemolytic Streptococci Recovered During an Epidemic in a Kindergarten. P. L. Boisvert and P. A. Bearg, New Haven, Conn.—p. 519.
Functional Results of Perineal Prostatectomy. C. L. Deming, New Haven, Conn.—p. 521.
Reaction of the Adrenal Cortex to Low Atmospheric Pressure. L. L. Langley and R. W. Clarke, New Haven, Conn.—p. 529.
Diethylene Glycol as Medium for Heat Sterilization of Surgical Instruments. S. C. Harvey and J. S. Gardner, New Haven, Conn.—p. 547.
Effect of Potassium on Growth of Normal and Malignant Cells in Tissue Culture. R. Tennant and A. A. Liebow, New Haven, Conn.—p. 553.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Heart Journal, London

4:1-56 (Jan. and April) 1942

Two Cases of Digitalis Poisoning. K. D. Wilkinson.—p. 1.
Congenital Heart Block: Report of Case. W. Stein and J. S. Uhr.—p. 7.
Congenital Pulmonary Stenosis with Left Ventricular Enlargement Associated with Atrial Septal Defect. P. Wood.—p. 11.
Infarction of the Cardiac Auricles (Atria): Clinical, Pathologic and Experimental Studies. E. H. Cushing, H. S. Feil, E. J. Stanton and W. B. Wartman.—p. 17.
*Prognosis of Right Bundle Branch Block: Study of 104 Cases. G. A. Perera, S. A. Levine and H. Erlanger.—p. 35.
Dr. Samuel Johnson: His Medical History as Recorded by James Boswell. T. East.—p. 43.
Inversion of T Waves After Long Paroxysms of Tachycardia. M. Campbell.—p. 49.

Right Bundle Branch Block.—Prompted by the impression that patients with right bundle branch block present a better prognosis than do those with cardiographic evidence of a left bundle lesion, Perera and his collaborators studied a group of cases of the former disorder with particular reference to the survival time following diagnosis. They present an analysis of 104 cases of right bundle branch block. They observed that reduplicated heart sounds, gallop rhythm and pulsus alternans were uncommon in this series. The two latter disorders were noted in a small group in which advanced heart disease was present. Forty per cent of the patients had no appreciable subjective discomfort from the heart. In fact, some have no subjective or objective evidence of heart disease apart from the right bundle branch block. The average survival time after the diagnosis of right bundle branch block in 29 fatal cases was three years. If the 6 patients who came into the hospital more or less moribund and died within a few days are excluded, the average survival period of the fatal group was four years and five months. Of the 62 patients alive when last seen or heard from, the average survival period was four years and one month. The longest survival period among the living patients was seventeen years and, among the fatal cases, sixteen years and seven months. The impression that patients with right bundle branch block have a distinctly more favorable prognosis than do those with a left bundle branch lesion has been sustained.

British Journal of Ophthalmology, London

26:141-188 (April) 1942

Oral Sepsis in Relation to Ophthalmology. H. T. Roper-Hall.—p. 141.
Doyne's Discoid Cataract (Coppock). P. H. Adams.—p. 152.
Eyelid Reflex in Emmetropia. M. Luckiesh and F. K. Moss.—p. 153.
Etiology of Phlyctenular Ophthalmia. A. Sorsby.—p. 159.

British Journal of Urology, London

14:1-62 (March) 1942

Ectopia Vesica. D. V. Davies.—p. 1.
Genitourinary Complications of Influenza. C. Morson.—p. 11.

British Medical Journal, London

1:459-486 (April 11) 1942

*Changes in Hemoglobin Concentration and Plasma Specific Gravity Following Plasma Transfusions. J. Beattie.—p. 459.
*Changes in Blood Volume Following Transfusions of Serum or Plasma and Fate of Injected Protein: Preliminary Report. G. W. Hayward and A. Jordan.—p. 462.
The Low Nail. H. A. Brittain.—p. 463.
New Method of Controlling the Head Louse. J. R. Busvine and P. A. Buxton.—p. 464.

1:487-514 (April 18) 1942

Management of Pulmonary Disease in the Forces. J. H. Hutchison.—p. 487.
Porphyrinuria in Trinitrotoluene Poisoning. A. M. Kennedy and J. Ingham.—p. 490.
Incompatibility in Homologous Transfusion. G. C. Dockeray and H. Sachs.—p. 492.
Multiple Small Gut and Large Gut Injuries: Recovery. W. R. Black.—p. 494.
Pneumococci in Blood Stream Treated with Colonic Lavage and Sulfapyridine, with a Note on Changes in Differential White Cell Count. H. W. Hales.—p. 495.

Blood Changes After Plasma Transfusions.—Reduction in hemoglobin concentration of the blood following a rapid transfusion of a known quantity of plasma has been used as a means of calculating the pretransfusion blood volume. This method, according to Beattie, makes several assumptions: (1) that complete mixing of the plasma with all the circulating blood takes place, (2) that the number of red cells in circulation during transfusion and mixing remains constant and (3) that the plasma volume after transfusion and mixing is equal to the volume of plasma before transfusion plus the volume of plasma transfused. If one or more of these assumptions is incorrect, the blood volumes estimated may differ considerably from the true blood volume. It has been assumed (Hayward, 1942) that when the hemoglobin concentration returns to its pretransfusion level the volume of plasma transfused has been eliminated from the blood stream. This assumption implies that the only factor which causes an increase in hemoglobin concentration is the movement of fluid from the blood. It is important, therefore, to examine any evidence which throws light on the validity of these fundamental assumptions. The author describes observations made during an investigation into the physical and chemical changes in the blood after transfusion of plasma. His studies were made on cats. Intravenous transfusions of plasma into anesthetized animals are followed by changes in hemoglobin concentration and plasma protein content which cannot be explained on the basis of a simple mechanical mixing of the transfused plasma with the circulating blood. The formation of surface films of plasma in capillaries opened up to receive the transfused plasma reduces the amount of plasma available for dilution of the circulating blood and leads to high hemoglobin values with consequent high estimates of blood volume. Movement of protein free fluid from the blood stream cannot account for the observed changes in plasma specific gravity and hemoglobin concentration. Movement of plasma proteins probably occurs simultaneously with this shift.

Blood Volume After Transfusion.—Hayward and Jordan state that the widespread use of intravenous serum or plasma in recent months has aroused interest in the effect of transfusions on the blood volume and the fate of the transfused protein. They have made observations on changes in the blood volume and the fate of the serum protein in normal patients and in a series of patients with peripheral vascular disease. The importance of plasma protein in regulating blood volume has been emphasized by Chang (1932). He found that the blood volume was reduced in nephrosis and that any rise in plasma protein concentration was accompanied by a rise in plasma volume. He concluded that plasma protein concentration is one of the regulating factors of circulating volume. The fate of the injected protein is interesting. There is good evidence from animal experiment that transfused serum protein can be utilized in body metabolism and will maintain a protein fasting animal in nitrogenous equilibrium. In the present series of cases, changes in the blood volume after serum or plasma transfusion have been followed by means of estimations of the hemoglobin and hematocrit readings. The serum used was pooled serum and had a total protein content of about 7 Gm. per hundred cubic centimeters. In a few cases citrated plasma was given the protein content of which varied from 4.06 to 6.25 Gm. per hundred cubic centimeters. The initial blood volume of most of the patients was presumed to be normal. The hemoglobin, and therefore the blood volume, after transfusion of 800 to 1,200 cc. of serum or plasma returned to normal in from two to five days. Statistically the hemoglobin values fall immediately after transfusion and return to their pretransfusion level in three days. On the fourth and fifth days there is no significant lowering of the average hemoglobin value. The changes in the hematocrit readings confirm the results obtained from hemoglobin determinations. The hematocrit readings did not always return to their initial values when the hemoglobin had returned to normal. Such a difference, if real, must mean that while the hemoglobin content of the individual cells remains unchanged the cell volume decreases. The total protein concentration of the circulating plasma was studied in 17 cases. In no case was any significant change found to occur in the plasma protein concentration, so that the transfused fluid and protein are removed from the circulation together. The fate of the injected protein is obscure. None appeared in the urine following any transfusion. If metabolism of the excess protein occurs rapidly, some change in the blood urea may be found. The blood urea was studied after eleven transfusions of serum; the results revealed no consistent rise in the blood urea.

Lancet, London

1:405-432 (April 4) 1942

Biologic Value of the Proteins Contained in Wheat Flours. Harriette Chick.—p. 405.
*Sulfonamide Resistant Streptococci in a Plastic Surgery Ward. A. E. Francis.—p. 408.
*Late End Results of War Burns. C. P. G. Wakeley.—p. 410.
Interpretation of Chemotherapy Through Nutritional Studies. H. McIlwain.—p. 412.

Sulfonamide Resistant Streptococci in a Plastic Surgery Ward.—The occurrence in a surgical ward of 13 cases of infection by a sulfonamide resistant strain of Streptococcus pyogenes of type 12 despite the institution of precautionary measures leads Francis to conclude that cross infection was still occurring. The precautionary measures were the local application of sulfanilamide powder, improved dressing technic, the application of spindle oil to ward floors, formaldehyde disinfection of wards vacated by infected patients, segregation of patients and the prophylactic oral administration of sulfanilamide to patients undergoing operations. The 13 cases occurred in one male ward and all but 2 in that half of the ward to which the first infected patient was admitted. This patient was treated in a bathroom at the end of a passage, from which opened successively the bathroom, a staircase, linen room, two four bed rooms, an eight bed room and four single bed rooms. In cases 3, 4 and 7 the presence of the sulfonamide resistant streptococcus did not cause any general reaction or change in the appearance of the wounds, but in each case surgical intervention was followed by a severe infection. In cases 5, 6, 9, 10 and 12 severe infection occurred without surgical intervention. It is not suggested that Strep. pyogenes type 12 is resistant to the sulfonamide derivatives; in fact, several sensitive strains of this type have been encountered. There is no evidence to connect them with this series of cases. A resistant strain of group A, type B 3264, has been isolated in 2 cases. The spread of the infection was recognized owing to the practice of making repeated examinations of the wound flora and of typing streptococci if a new infection was suspected. The mode of spread has not been satisfactorily explained. A "no touch" technic was not employed for dressings at the time; reliance was placed on sterile gloved hands. The gloves, put on at the beginning of a dressing round, were washed with soap and water for two minutes between dressings. Aerial dissemination of infection from blankets and dressings might have spread the infection. At the time the blankets were not treated with oil, as is now recommended. It is possible that the bath in which case 1 was treated served as the vehicle in 2 or 3 cases, but the evidence is not conclusive. The bath was disinfected after use by a method similar to that described in the Medical Research Council War Memorandum No. 6, but this bath had a mixer input, covered by a riveted brass disk, which was below the surface of the water when the bath was filled, and this could not be adequately sterilized. The control and treatment of such resistant infections will probably depend on substances like gramicidin and penicillin. In case 3 the infection producing serious trouble after a grafting operation was successfully eradicated by local applications of gramicidin. In vitro experiments have shown that these sulfonamide resistant streptococci are just as easily inhibited by gramicidin as are sensitive strains.

End Results of War Burns.—In this war, burns have been common in the services and among civilians. Given proper treatment, Wakeley points out, 90 per cent heal and do not give rise to permanent deformities or disabilities, but in about 10 per cent there is definite disfigurement or scarring. During World War I slightly more than 20 per cent were left with persistent deformities of the hands or face in spite of plastic and other operative procedures. This high incidence was due to sepsis, which still is the bugbear of the treatment of war burns and to which the majority of scarring deformities are due. In the last war the common cause of war burns was cordite, and the face and hands were the sites most frequently affected. The Admiralty adopted protective measures for all gun crews, which consisted of asbestos gauntlets and a hood over the head and shoulders. This so-called "antiflash gear" was in use at the outbreak of the present campaign. But it soon became clear that more protection was required for the face, for the ships were subjected to repeated dive bombing, from which a common type of facial burn resulted. Extra protection was given in the form of an eye shield of cellulose acetate and a small mask of "Aertex" material impregnated with a heat resisting solution. Since the introduction of this additional protection the number of burns of the face and hands has fallen considerably, but this extra protective covering is trying in the tropics and is not always worn, and so burns still occur among men who have neglected this form of protection. To arrive at a definite final assessment of war burns, exact knowledge of the extent and depth of the primary injury is necessary. Complications can be prevented by early skin grafting, but although this is well recognized it is not undertaken as often as it should be. With war burns the medical officer who attends the initial burn rarely sees the case through the healing stages. To prevent this constant evacuation, burn centers with special wards and equipment should be established. The Ministry of Health, the Navy and the Air Force have recognized this necessity and have instituted special hospitals to which all the seriously burned are transferred as soon as possible. These burn centers are in reality research stations, and the observations of the best methods of treatment should clarify this very controversial subject. A follow-up is just as important in burns as in fractures if anything is to be learned about the best forms of treatment and their end results. Only the severely burned reach the burn centers where the final result is known, but it is equally important to have some idea of the final result of the less severely burned for comparison with the severe type. The profession tends to take little interest in a burn when once healing has occurred. This is a great pity, for the follow-up of service cases has proved the great value of the continued use of hydrous wool fat. In the after-treatment of extensive burns superficial roentgen therapy can play an important part, especially if there is any suggestion of a keloid and when extensive skin grafting has been performed and there is a danger of excessive formation of collagen between the grafts. While it is important to follow up burn cases for six months it is also important that these patients should not be submitted to extended hospitalization. Patients with extensive burns, especially if skin grafting has been employed, should be moved to a convalescent home as soon as healing is complete. The change of scene and company helps to sustain their morale. In the convalescent home or rehabilitation center the patients must be encouraged to exercise their minds as well as their burned parts by graded games and competitions. In service cases a man's promotion may come through while he is in the hospital, and therefore the rehabilitation center must have facilities for study or instruction so that he may take his place in the service when he returns. The centers should have an outpatient clinic where patients can be seen and treatment given for part of the day while for the rest of the day they are employed in some duty at the depot, barracks or port. Many key men may have to be invalided out of the services unless such facilities are forthcoming.

Medical Journal of Australia, Sydney

1:331-362 (March 21) 1942

Calcium and Phosphorus Content of Milk from Australian Women. Beverley V. Ritchie.—p. 331.
Rickets in Infants Aged Under One Year: Incidence in Australian Community and Consideration of Etiologic Factors. F. W. Clements.—p. 336.

1:363-394 (March 28) 1942

A Salaried State Medical Service. R. Cilento.—p. 363.
Congenital Abnormalities of Genitourinary System. M. G. Sutton.—p. 370.

1:395-424 (April 4) 1942

Some Practical Points in Reception and Treatment of Air Raid Casualties. L. Phillips.—p. 395.
Medical Problems in Practical Flying. S. M. L. Dunstone.—p. 397.
Notes on Disabilities of the Foot Seen in Regimental Aid Posts. R. S. Lahz.—p. 400.
Foot Standards for War Service. D. Barry.—p. 404.
Industrial Dermatitis. H. L. Kesteven.—p. 406.

Tubercle, London

23:25-58 (Feb.) 1942

Rehabilitation and Care of the Tuberculous: Fifth Report of Employment Committee of the Joint Tuberculosis Council. P. Edwards, G. Jessel, D. P. Sutherland, F. R. G. Heaf and J. B. McDougall.—p. 25.
Investigation into Symptomatology of Pleural Aspirations in Hydropneumothorax. H. P. Fernandes.—p. 50.
Discovery of Symptomless Pulmonary Tuberculosis. Policy of National Association for Prevention of Tuberculosis.—p. 56.

Schweizerische medizinische Wochenschrift, Basel

71:1465-1488 (Nov. 22) 1941. **Partial Index**

Physician and Psychotherapist. G. Fanconi.—p. 1465.
*Aseptic Necroses. R. Meyer-Wildisen.—p. 1470.
Systematization of Hemorrhagic Diatheses. R. Jürgens.—p. 1473.
*Epidemiology of Acute Epidemic Myalgia (Bornholm Disease). R. Rehsteiner.—p. 1476.
Cervicobrachial and Lumbosacral Radiculalgia of Vertebral Origin. M. Monnier.—p. 1480.

Aseptic Necroses.—Meyer-Wildisen discusses aseptic, trophic bone disturbances which develop in the epiphysial or apophysial portions of the skeletal system. They involve particularly the subchondral areas of various joints, the growth zones and the articular cartilages and are found chiefly in young persons. Among these are malacia and necrosis of the os lunatum, necrosis of the os naviculare (Köhler's disease I), the analogous disorder of the second and third metatarsal heads (Köhler's disease II), chondropathia patellae and Schlatter's disease or impaired ossification of the tuberosity of the tibia. Perthes' disease (osteochondropathia coxae juvenilis) presents the best known and one of the most important diseases of the epiphyses and apophyses during the period of growth. Diseases of the vertebral column that have genetic relations to aseptic, trophic bone disorders are (1) Calvé's vertebra plana and (2) adolescent kyphosis (Scheuermann's disease). Secretory and constitutional factors play a part in many of these conditions. Chronic repeated slight external injuries often precede the onset. In cases in which no intervention is made, the course is generally extremely chronic. In a certain percentage of the cases of osteochondritis, traumatic influences act as an indirect cause. Traumatic cases are nearly all found in soldiers or in persons who are active in sports; they are unilateral; anatomic and functional cure is generally effected by surgical treatment. Such complete cure cannot be obtained in disorders in which constitutional and endocrine factors play a part.

Epidemiology of Acute Epidemic Myalgia (Bornholm Disease).—Rehsteiner reports an epidemic of acute myalgia (Bornholm disease) in a summer camp consisting of 104 boys, the majority of whom were between 12 and 15 years old. Of these 29 presented typical acute pain in the chest and abdomen, respiratory difficulties and fever; 4 were atypical cases. Some of the patients exhibited meningism, hematuria, nasal hemorrhages, vomiting and mild catarrhal symptoms of the upper air passages. The index of contagion was 32 per cent; relapses appeared in 58 per cent. The mode of infection could not be demonstrated. This epidemic of Bornholm disease remained limited to the camp; the author also cites examples of the sporadic occurrence of the disease. The epidemiologic behavior of acute myalgia closely resembles that of acute anterior poliomyelitis, but it differs from it in symptomatology and must be regarded as an independent nosologic entity.

71:1605-1632 (Dec. 27) 1941

Pigment Formation and Diamine Metabolism. P. Robert and E. A. Zeller.—p. 1605.
Swallowers of Foreign Bodies. M. Tschamper.—p. 1607.
Actions of Irgamid and Other Sulfanilamide Preparations Which Are Specific for Certain Species of Animals. R. Pulver.—p. 1608.
Donaggio Reaction. M. Gukelberger.—p. 1611.
*Studies on Goiter: Iodine Deficiency or Goiter Noxa. F. Blum.—p. 1612.
Primary Tuberculosis and Metatuberculosis in Military Service. W. Löffler and M. Kartagener.—p. 1615.
*Vitamin K in a Severe Case of Rheumatic Purpura. H. Schaad.—p. 1622.

Iodine Deficiency or Goiter Noxa.—Blum discusses the question whether goitrous enlargement is a sequel of iodine deficiency or the result of a specific noxa. If iodine deficiency were responsible for the development of goiter, the iodine supply would have to be either entirely deficient or the iodine of a type that cannot be assimilated. In the case of a goiter produced in rabbits by feeding cabbage neither of these two factors plays a part and apparently a noxa is responsible. He describes experiments in rabbits which demonstrate that there is a ratio of equilibrium between an antistrumigenic and a strumigenic diet. The primary point of attack for this noxa is not the thyroid but the liver. Under the influence of the noxa active in "cabbage goiter" the liver loses its capacity to split hydrogen iodide from vegetable iodine and thus cannot supply the thyroid with this substance which is essential in the iodine protein elaboration, whereas the thyroid itself retains the capacity to utilize potassium iodide. The blockage of the hepatic "de-iodase" for vegetable iodine produces the iodine deficiency of the thyroid, which in turn makes impossible formation of iodine protein. Whether the noxa exerts a harmful effect also on the cells of the thyroid, the author is unable to state. It does not deprive the thyroid cells of the capacity to produce iodine protein from administered potassium iodide. Considered from this point of view, prophylaxis with iodized salt attacks not the site of the primary impairment, the liver, but rather the subsequent point, the thyroid.

Vitamin K in Purpura Rheumatica.—Schaad reports the history of a man aged 51 with a severe form of rheumatic purpura. Acetylsalicylic acid, aminopyrine and intravenous administration of calcium and of vitamin C produced only temporary improvement. On a treatment with vitamin K and calcium injections the purpura rapidly subsided and a permanent cure was apparently obtained.

Medicina Española, Valencia

6:509-610 (Dec.) 1941. **Partial Index**

*Malignant Syphilis: Resistance to Arsenotherapy. D. F. Lana Martínez.—p. 509.
*Progesterone in Prevention of Abortion Following Gynecologic Operations in Pregnant Women. A. Clavero Núñez.—p. 520.
Experimental Studies on Morphogenesis of Blood. F. Cantos Royo.—p. 526.
Renal Tuberculosis. R. Alcalá Santaella.—p. 537.
Phrenic Paralysis in Treatment of Pulmonary Tuberculosis. M. López Sendón.—p. 547.
Post-Traumatic Heterotopic Ossification Around the Hip Joint. J. Gascó Pascual.—p. 556.
*Treatment of Herpes Zoster with Vitamin B_1. A. Zubiri.—p. 578.

Malignant, Arsenoresistant Syphilis.—According to Lana Martinez not only has the incidence of syphilis increased in Spain recently but its virulence is such as has not been seen since the prearsphenamine era. Patients who have undergone intensive treatment with arsenic preparations still exhibit lesions and strongly positive serologic reactions. Arsenoresistant cases of syphilis began to increase in many countries after 1927. Three factors may play a part in arsenoresistance: (1) the medicament, (2) the special reaction of the spirochete to the medicament and (3) deficiency in the defensive powers of the organism and its incapacity to break down the arsphenamine into the active form. The cause of the more severe forms of syphilis and of the greater frequency of the arsenoresistant cases must be sought in a combination of different factors. The organism and the drug must act together to effect a cure. If either fails, the therapeutic effect will not be adequate. Syphilitic waves coincide with periods of economic depression, which are accompanied by increase in prostitution, laxity of morals and decline of restraints. As a result a larger number of persons come in contact with the spirochete than is the case ordinarily. The more frequent, rapid and shorter passages are conducive to a greater virulence. Buschke and Joseph recommend for the treatment of malignant and arsenoresistant syphilis bismuth compounds, mercurials, iodine, iodides, gold salts and autohemotherapy. The organism may be influenced by injections of sodium nucleinate, milk, turpentine, sulfur and hyperthermy. Alcohol and tobacco are to be discouraged, gymnastics, baths and life in the open air encouraged. Liver, thyroid and vitamins have been recommended. Neoarsphenamine and preparations of bismuth should both be employed. Vitamin C is given to improve the tolerance of the organism to these drugs.

Progesterone for Prevention of Abortion Following Gynecologic Operations.—Clavero Núñez reports the occurrence in a woman aged 27 of several uterine myomas, one of which, on the posterior surface of the uterus, was unusually large, its lower pole descending into the pouch of Douglas and blocking the vagina. Removal of the tumor was performed during the twenty-second week of pregnancy. Immediately after the operation, 10 mg. of progesterone was administered intramuscularly and repeated on the following days until a total of 40 mg. had been given. The recovery was uneventful and the pregnancy was carried to term. In the second case appendectomy and salpingectomy were performed during the tenth week of gestation. The ovary of the same side was normal and was the seat of a corpus luteum of pregnancy, for which reason

special care was taken to preserve it. The patient, a woman aged 25, likewise received 40 mg. of progesterone in the same manner and with the same results. The postoperative course was favorable and the pregnancy was carried to term.

Vitamin B_1 in Herpes Zoster.—Zubiri reports 3 cases of herpes zoster in which he obtained satisfactory therapeutic results with vitamin B_1. The pain subsided after one or two days and the vesicles dried up in three days. Others have used vitamin B_1 successfully in the same condition. Administration of vitamin B_1 appears to be the most rational treatment of herpes zoster.

Memorias do Instituto Oswaldo Cruz, Rio de Janeiro

36:237-444 (No. 3) 1941. **Partial Index**

*Rupture of Spleen in Typhoid. C. Magarinos Torres and J. Guilherme Lacorte.—p. 363.

Rupture of Spleen in Typhoid.—Margarinos Torres and Guilherme Lacorte report the necropsy of a man aged 21 who died of typhoid in the second week of the disease. Eberthella typhosa was present in blood culture. Acute perisplenitis, intracapsular hemorrhages and distention of the capsule of a greatly enlarged spleen were present. These changes with possibly a slight trauma seemed to have been the cause of the spontaneous rupture of the spleen and the consequent hemoperitoneum (2 liters) which caused death. Eberthella typhosa was also recovered in pure cultures from splenic tissue.

Revista Clínica de S. Paulo, São Paulo

11:1-30 (Jan.) 1942. **Partial Index**

*Actual Results of Roentgen Therapy in Artificial Pneumonia. C. Fried. —p. 1.

Roentgen Therapy in Experimental Pneumonia.—Pneumonia produced by transtracheal injection of pneumococci of types 1, 2 and 3 in guinea pigs has the same macroscopic and microscopic appearances as has pneumonia caused by hemolytic staphylococci. The action of roentgen irradiation in this type of pneumonia is much the same as in staphylococcic pneumonia. When roentgen therapy is applied between the sixth and tenth hours after the infection it prevents or diminishes the growth of the inoculum. The respiratory capacity of the irradiated lung is preserved by wide areas of dilated alveoli replacing those which are compressed by the pneumonic exudate. The author believes that this phenomenon, which he calls vicarious emphysema, helps in relieving the animals' dyspnea. Stagnation of blood in the bronchial arteries and in the small veins of the lung is observed in nonirradiated animals, whereas it does not occur in the vessels of the irradiated animals. Consequently cardiac death does not occur. Late irradiation, that given between the eighteenth and twenty-fourth hours after the onset of pneumonia, produces the same effects as early irradiation. However, effects of late irradiation appear more slowly and are moderate. The author concludes that roentgen irradiations have the same therapeutic effects in human pneumonia as in experimental pneumonia. The importance of roentgen therapy in pneumonia is stressed.

Archiv für Psychiatrie und Nervenkrankheiten, Berlin

112:517-698 (Feb. 4) 1941. **Partial Index**

Central Tone Deafness with Monoaural Secondary Sound Interference and Sensory Dysmusia. G. Wilke and G. Destunis.—p. 517.
Genealogy of Homosexuality. K. Jensch.—p. 527.
Therapy of Schizophrenia by Means of Anoxia Induced by Nitrogen Inhalation. K. Gyárfás and Z. Fabó.—p. 541.
*Addiction to Hypnotics Obtainable Without Prescription. D. Sacher. —p. 552.
Prognosis of Schizophrenia. S. Hutter.—p. 562.

Addiction to Hypnotics.—Sacher discusses addiction to hypnotics obtainable without prescriptions on the basis of 30 clinical cases. He investigated consumption of hypnotics by reviewing the annual sales of an apothecary shop. Hypnotics obtainable without prescription and those obtainable with prescription were sold in a ratio of 10 to 1. Ninety-one per cent of the hypnotics obtainable without prescription were barbituric acid derivatives, while 9 per cent were urea bromide derivatives. The hypnotic most often responsible for addiction was cyclobarbital (17 of the 30 cases); two other hypnotics sold in almost as great or even larger amounts had caused only 1 case each of addiction. Barbituric acid derivatives obtainable without prescription became important as causes of addiction soon after the new and more strict narcotics law was enacted in 1931. Many of the former morphine addicts used these hypnotics as substitutes. Cyclobarbital is of especial importance not only because it was responsible for the largest number of addictions but also because it has a high tolerance. The symptoms of intoxication caused by cyclobarbital are the same as those caused by other barbituric acid derivatives. The majority of the patients had nystagmus, reduction of pupillary reflexes, Romberg's phenomenon, pyramidal symptoms, coarse tremors and scanning speech. Sudden withdrawal of cyclobarbital often leads to severe states of agitation with aggressiveness and unstable moods; euphoria alternates with depression and anxiety. There is a tendency to lying and cheating. In contradistinction to cyclobarbital, the other hypnotics obtainable without prescription were often indiscriminately changed by the addicts or were combined with morphine derivatives. The doses used were generally much lower, and psychosis or epileptic attacks were never observed. All of the addicts were mental workers and a considerable number had some connection with the medical profession or the drug trade. The prognosis of the addiction to these hypnotics is unfavorable because a large portion of the patients have relapses. In 1940 prescription became obligatory for all hypnotics which contain barbituric acid derivatives, whereas the urea bromide derivatives (carbromal, abasin, bromural) are still obtainable without prescription.

Klinische Wochenschrift, Berlin

20:497-528 (May 17) 1941. **Partial Index**

Experiences with Tolerance (Exertion) Electrocardiogram. H. Reindell and L. Delius.—p. 497.
*Chemoprophylaxis of Gas Gangrene: Experimental Infection with Soil in Friedrich's Experiment. H. T. Schreus and E. Peltzer.—p. 504.
*Experimental Studies on Improvement of Heat Tolerance in Human Subjects. B. Schlegel.—p. 506.
Sulfonamide Action on Mother and Child During Birth. H.-W. Kayser. —p. 510.
Serial Tests with Tuberculin and Their Significance for Epidemiology of Tuberculosis. A. Nagel.—p. 514.
Appearance of Iodophil Substances in Leukocytes Following Anesthesia and Operation. G. Habelmann.—p. 517.

Chemoprophylaxis of Gas Gangrene.—Schreus and Peltzer tested 17 specimens of garden soil and 3 dust samples according to Friedrich's technic for their capacity to produce gas gangrene or tetanus. Eleven of the 17 soil specimens and the 3 dust samples did not cause fatal gas gangrene in the inoculated animals, and 10 of these also failed to produce tetanus. More detailed experiments with 6 other soil specimens corroborated Friedrich's observations. The time limit for the possibility of surgical sterilization is six hours; in less infectious soil specimens it may be extended to nine hours. The death time likewise is a suitable indicator of infectiousness of soil specimens. Even in moderately infectious soils the death time is less than sixty hours. Animals which outlive sixty hours often die of tetanus. It can be assumed that these animals, like those which survive completely, escape the gas gangrene infection. The authors conclude that the frequently expressed opinions about the favorable results of Friedrich's excision beyond the six hour limit can be explained by the fact that of the many wounded only a small percentage are threatened by really infectious soils. The ostensible prevention of gas edema by late excision is probably a deception. In war, as well as in peace, conditions for the development of a gas gangrene infection are rarely as favorable as under the special conditions of Friedrich's animal experiments. The soil specimens which were tested repeatedly showed no great fluctuations in the infectiousness for tetanus and gas gangrene.

Improvement of Heat Tolerance.—Schlegel reports studies on the influence of adrenal cortex extract on disorders caused by heat. The effects observed were (1) an increase in the elimination of water by the skin; (2) a simultaneous increase in the cutaneous elimination of sodium chloride and (3) a stabilization of the circulation with alleviation of the subjective complaints. The point of attack of the adrenal cortex

extract seems to be chiefly the myocardium. The author classifies the heat disorders into heat exhaustion, heat stroke and heat convulsion but admits that these frequently overlap. In heat exhaustion in which the circulation is impaired but in which the physical heat regulation is still intact or only slightly damaged, the prophylactic administration of the extract stabilizes the circulation and prevents collapse. The organism, thus protected against heat exhaustion, is in danger of heat stroke if it is further exposed to heat and its heat regulation is inadequate. Heat stroke results from the failure of the physical heat regulation and the considerable increase in temperature accompanying it. The adrenal cortex extract acts by maintaining the physical heat regulation through increased and prolonged sweating. It is essential that the sweat shall evaporate and that its heat regulatory function shall not be nullified by high moisture content of the air.. The third form of heat disorder, heat convulsion, threatens persons with intact circulation and good physical heat regulation who are protected against heat exhaustion as well as heat stroke. These are persons who by training have become accustomed to working in hot surroundings. As a result of profuse sweating their water and particularly sodium chloride supplies become depleted, and the sodium chloride deficiency brings on the danger of heat convulsion. Here adrenal cortex extract is undesirable because it would favor sodium chloride depletion. The most effective prophylaxis here is an adequate filling of the body depots with water and sodium chloride. Heat convulsion may be accompanied by circulatory symptoms characteristic of heat exhaustion; for this reason administration of adrenal cortex extract may be desirable. In general, simultaneous administration of adrenal cortex extract and of water with sodium chloride will not have undesirable results. Since the administration of the extract by injection is not practical for large groups, attempts have been made with oral administration, but these have so far failed. Dextrose, phosphoric acid compounds, pervitin (synthetic amine related to ephedrine) and kola could be tested for their effect on the heat impaired body. Ascorbic acid could be tried not only because of its strengthening effect but also because the adrenal cortex has an extraordinary high vitamin C content.

Therapie der Gegenwart, Berlin

82:1-48 (Jan.) 1941. **Partial Index**

Tularemia: Diagnosis and Treatment. H. Fuhs.—p. 1.
Treatment of Rectal Prolapse in Children. H. Koch.—p. 5.
Induction of Labor in Prolonged Pregnancy. W. von Massenbach.—p. 18.
Treatment of Cystitis and Pyelitis by General Practitioner. H. Weber.—p. 22.
*Chronic Manganese Poisoning and Its Management. H. Gärtner.—p. 25.

Chronic Manganese Poisoning.—Gärtner lists pyrolusite, manganite, braunite, hausmannite and manganese spar as some of the ores from which manganese is obtained. With comparatively primitive methods of mining manganese poisoning is rare, but in mines in which pneumatic drills are used considerable amounts of dust are produced and the incidence of poisoning is higher. Manganese is used chiefly in the steel industry but also in the chemical, ceramic, glass, dye and varnish industries and in electrotechnics. Cases of poisoning may occur whenever manganese is handled and particularly when manganese dust is produced. Exposure to the dust alone is not sufficient, because with the same exposure only a part of the workers develop symptoms of poisoning. Persons with chronic inflammation of the respiratory passages are particularly vulnerable. The filter capacity of the nose is another important factor. Manganese enters the organism chiefly through the respiratory passages, although swallowed manganese is also of importance. The metal is eliminated in the urine and particularly in the feces, but only after a certain amount of it has been stored in the liver and the kidneys. The symptoms of manganese poisoning are caused by a chronic involvement of the central nervous system. There is impairment in walking, the so-called rooster step, difficulty in bicycle riding and dancing, spilling of fluids while eating and a tendency for the handwriting to become smaller. There may be tremor, adiadokokinesis, salivation and compulsive laughter or crying. Impairment of potency and lack of libido are characteristic. Prognosis is favorable for life but very unfavorable for restoration of health. Chronic manganism may also produce thyrotoxic disturbances, or the course may resemble that of a progressive bulbar paralysis or of amyotrophic lateral sclerosis. There may be pyramidal symptoms. Hepatic lesions, joint disorders, thirst, hunger, glycosuria, increased basal metabolism and vasomotor disturbances have been observed. Resemblance to postencephalitic parkinsonism is close. The latter as well as multiple sclerosis, Wilson's disease (progressive lenticular degeneration) and arsenical poisoning must be considered in the differential diagnosis. A history of exposure to manganese is important. The treatment is chiefly symptomatic. Pneumonia is rather frequent among manganese workers and has a high mortality rate. Because of the inadequacy of treatment, preventive measures are important. These include devices to eliminate manganese dust, frequent change of the workers, careful selection of workers (exclusion of those with signs of thyrotoxicosis and with irritability of the respiratory passages) and efforts to detect the first symptoms by examinations at short intervals.

Sovetskiy Vrachebniy Zhurnal, Leningrad

4:242-319 (April) 1941. **Partial Index**

Basic Problems in Campaign Against Bacillary Dysentery. O. O. Gartokh.—p. 242.
*Etiology and Diagnosis of Dysentery in Young Children. S. S. Kazarnovskaya and O. I. Soloveva.—p. 254.
*Clinical Aspects of Chronic Dysentery. M. A. Neyman.—p. 266.
Work of Dispensaries in Detection of Chronic Dysentery. E. M. Novgorodskaya, N. S. Itter, O. I. Soloveva and G. M. Goldberg.—p. 270.

Dysentery in Young Children.—Kazarnovskaya and Soloveva maintain that acute diarrhea in children, clinically diagnosed as hemorrhagic colitis, is in reality dysentery. By examination of feces during the first few days of illness and by multiple cultures, dysentery bacilli may be demonstrated in practically all cases of hemorrhagic colitis. The authors emphasize the necessity of comparing the results of the bacteriologic and coprologic examinations before deciding that a patient has ceased to be a carrier and may be safely sent home. Because of imperfections of present day bacteriologic technic, a bacteriologic examination alone is not sufficient. Their findings indicate that only 65.4 per cent of children are free from dysentery bacilli after three weeks (the average duration of the dysenteric process in young children), while 34.6 per cent continue to excrete bacilli much longer. They point out the difficulty of differential diagnosis between toxic dyspepsia and dysentery in young children, when the dysenteric process appears in the form of enteritis with signs of toxicosis. The term "summer diarrhea" has been applied to diseases of different etiology and different epidemiologic significance. By means of the coprologic examination a rapid and early diagnosis is possible in cases of acute infantile diarrhea. The simplicity of this method makes it especially suitable for dispensary practice.

Clinical Aspects of Chronic Dysentery.—Neyman's studies are based on prolonged observations of 751 persons with acute dysentery in 1938. Excretion of dysentery bacilli was demonstrated in 44 (8.7 per cent) of 502 persons examined bacteriologically. The majority of these presented certain definite clinical symptoms which made possible the diagnosis of chronic dysentery. The most constant clinical sign was the syndrome of distal colitis. There was a tendency to recurrence with appearance of blood, mucus and pus in the feces. The clinical course of patients excreting Shiga bacilli was different from those excreting Flexner bacilli. The author stresses the value of a bacteriologic examination of feces in patients with gastrointestinal complaints who present a history of acute dysentery even though negative findings do not in themselves exclude the possibility of chronic dysentery. Among factors concerned in the transition from acute dysentery into the chronic form the author lists the nature and course of the acute process, the patient's constitution and chronic gastrointestinal disease preceding the acute dysentery. At present only severe and typical forms of chronic dysentery can be diagnosed, while the milder, atypical forms offer diagnostic difficulties which require further study.

Book Notices

Anæsthetics Afloat. By Surgeon Lieutenant Commander Ronald Woolmer, R. N. V. R., B.A., B.M., Anæsthetic Specialist, R. N. Medical Service. With an introduction by Surgeon Captain H. D. Drennan, D.S.O., R. N. Cloth. Price, 6s. Pp. 120, with 18 illustrations. London: H. K. Lewis & Co., Ltd., 1942.

The author has prepared a brief and truly pocket size treatise dealing with the administration of anesthetics on board ship. Obviously space is lacking on one hundred small pages to include more than the bare essentials of practical instruction. Selection of what is "essential" for inclusion has been made with judgment. Illustrative of this judgment, the four pages devoted to examination of the patient cover only the points which have a direct bearing on danger and difficulties in anesthetic administration. For example, he says "It is annoying to realize the inaccessibility of superficial veins in the fat Stoker Petty Officer type only after one has decided upon intravenous anesthesia, with the syringe in hand and the patient on the table." The advantages of spinal and block anesthesia are rightly stressed, yet the author states that "for the maintenance of inhalation anesthesia on board ship, 'open ether' is the only practical method." The criteria of the stages of anesthesia differ from those usually accepted by anesthetists: the disappearance of the laryngeal reflex is not usually regarded as a sign of the onset of surgical anesthesia, and the author defines as the "fourth stage" what is commonly regarded as the fourth plane of the third stage. Chapters XI and XII are the most interesting part of the book. These deal with the problems of anesthesia during and immediately after a naval action; and the author's views are evidence of a rare combination of humanity, clinical judgment and common sense.

As a specialist in anesthesia and a naval officer, Mr. Woolmer writes from first hand experience. His book should be read by any medical man who may have occasion to act as an anesthetist on board a ship.

Industrial Surgery: Principles, Problems and Practice. By Willis W. Lasher, M.D., F.A.C.S., Assistant Professor of Traumatic Surgery, New York Post-Graduate Medical School, Columbia University, New York. With a foreword by Charles Gordon Heyd, M.D. Enlarged first edition. Cloth. Price, $6.50. Pp. 472, with 194 illustrations. New York & London: Paul B. Hoeber, Inc., 1942.

This is published at a time when the number of persons treated by industrial surgeons is at an all time high. Additions have been made throughout. The basic format has not been materially altered, except for additions of new material and methods. Two chapters have been added: one on strains and sprains, which repeats portions of the book which bear repetition, and one on chemotherapy and dehydration, which is rather sketchy. The author's premise that industrial surgery will be recognized as an independent specialty is one that will probably not be generally accepted. Though there are many problems peculiar to compensable injuries, the physiopathologic changes are similar and their interpretations are for the most part not much different than in any other injuries. The book is well written and fairly well illustrated. Though inclusive, several sections are rather brief. It is a good guide for the many general surgeons who are entering the industrial field at this time.

Clinical Endocrinology. By Samuel A. Loewenberg, M.D., F.A.C.P., Clinical Professor of Medicine, Jefferson Medical College, Philadelphia. Foreword by Hobart A. Reimann, M.D., Professor of Medicine and Clinical Medicine, Jefferson Medical College. Second edition. Fabrikoid. Price, $8. Pp. 883, with 194 illustrations. Philadelphia: F. A. Davis Company, 1941.

This volume is written in the classic form of medical textbooks and presents a vast amount of well organized information concerning each of the endocrine glands and the clinical aspects of diseases involving those glands. The book is heavily and well illustrated, and it has clearly been written to represent a complete textbook of endocrinology with information on the diagnosis and treatment as well as the underlying physiology and pathology of all endocrine diseases. Unfortunately the book falls short of this goal in a good many important respects. In the division of space, the thymus and pineal glands have been allowed fifty-five and twenty-four pages respectively while the male gonads and parathyroids occupy only forty-six and fifty-five pages. Thus there appears to be an overemphasis of the former pair, about which, from the clinical point of view, almost nothing is known. But the curtailment of discussion of the latter two is even more regrettable because of their relative importance. The pituitary rightfully receives the largest allotment of space—one hundred and sixty-two pages. In dealing with a field which has become, even in its clinical aspects, largely chemical and physiologic, the author's approach has remained largely descriptive. The sections concerned with physiology and chemistry are brief and superficial and can hardly be considered up to date. The chapter on the thyroid gland is a good example of this criticism. All the splendid recent contributions on the metabolism of iodine and iodoproteins and their application to the present changing concept of thyroid disease have not been included. Two pages of the one hundred and eleven devoted to the subject are concerned with thyroid physiology. Unusual emphasis has been placed on the differentiation between toxic adenoma and exophthalmic goiter, a distinction which physiologic studies are showing to be of less and less importance. Finally, and perhaps most important, inadequate attention has been paid to the multitude of clinical problems interrelated with thyroid disease, such as nutrition, calcium metabolism and cardiovascular aspects. Many of the same criticisms are equally applicable to the sections dealing with the adrenal glands and the gonads, both male and female. An abundance of physiologic material has been omitted. Nothing is mentioned concerning the qualitative differences between the various adrenal steroids and the interesting correlation between their chemical structures and physiologic actions. The brilliant contributions relative to the 17 ketosteroid compounds are not presented, thereby seriously detracting from discussions of the gonads and adrenals. Chapters 13, 14 and 15 contain summary material including laboratory tests, an outline of common endocrinopathies and common available endocrine products. Many readers will disagree individually on many of these details, such as, for example, the recommendation of whole anterior pituitary substance orally and the use of whole ovarian substance. The dominant criticism of this volume, however, is its failure to provide the necessary basis of pathologic physiology of endocrine disease, which is an indespensable prerequisite of any treatise of clinical endocrinology at the present time.

Self-Analysis. By Karen Horney, M.D. Cloth. Price, $3. Pp. 309. New York: W. W. Norton & Company, Inc., 1942.

This book is based on a series of lectures delivered to laymen at the New York School for Social Research in New York City. On page 7 the author says "There is little actual experience to serve as guide, my purpose has been merely to raise the issue . . . rather than to offer any clearcut answers." Again on page 28 she says "To what extent self analysis is possible without previous experience (that is, previous experience as a patient in a professionally guided analysis) must be left an open question." Under these circumstances the title of the book and the statements in the advertising matter are grossly misleading. They imply that the book presents a technic for self analysis which is available to any and every one, whereas it is based exclusively on longer or shorter periods of self observation during the course of a regularly conducted professional analysis. Why then is it presented to laymen at all, when the author acknowledges that the results of her procedure have not been subjected to critical clinical tests or to review by disinterested colleagues? There is a sound medical convention that nostrums should not be peddled to the public before they have been widely tested by more than one impartial observer. It is wholly indefensible that a book of this kind should be published as a popular book and advertised with a "money back if not completely satisfied" coupon, and as a "practical, detailed, step by step outline to guide the layman in this new technic." This is "patent medicine" advertising and a shocking departure from reputable procedure on the part of both the author and the publisher.

Furthermore, the material dealt with in the book should have been called "clinical self description" rather than "self analysis." Horney focuses the attention of the reader on the recognition of what she calls "neurotic trends." In her theoretical structure she attributes to neurotic trends a role in the etiology of the neuroses not unlike that which Freud assigns to instinctual drives. Her position, however, is not always consistent, because she also recognizes that these neurotic trends are themselves compulsive neurotic symptoms. In fact these "neurotic" trends of Horney consist of nothing more than a congeries of compulsive, symptomatic, neurotic behavior patterns. They are as compulsive in their nature as is a handwashing compulsion, although they are infinitely more subtle in their manifestations and more difficult to recognize, whether by the patient or by the physician.

Once this simple truth is realized, the basic weakness of Horney's system becomes apparent. If a patient has a compulsive demand to receive attention, and if the mere absence of a telephone call can throw such a patient into a frenzy of anxiety, it will give rise to a tension state which the patient must either bury in depression or act out blindly in many subtle but compulsive ways. On the other hand, if a patient has a handwashing compulsion and is prevented from washing his hands, then he too will be thrown into a state of tension and anxiety. Thus the essence of the two phenomena is the same. Both are familiar, although the latter is less subtle and more easily recognized than the former.

But no psychiatrist or psychotherapist, much less analyst, believes that a compulsion can be cured merely by confronting a patient with the fact that it is a compulsion, or even by a careful description of the interrelations of such symptoms. If the handwasher rationalizes his handwashing and feels that there are special reasons why he must wash his hands so often, it is important of course to break down these rationalizations in order to make the compulsive symptom itself more accessible to analysis. But no one for a moment would fool himself into believing that the accurate description of the symptom, or the patient's admission of the fact that it was a symptom, or the patient's abandoning of his rationalizations of his symptoms will put an end to the compulsive necessity which drives the symptom. Honest self description is an essential first step; but it constitutes only the antechamber to treatment. This fundamental fact holds true whether one is dealing with an obvious symptom like a handwashing compulsion or one of those subtle, diffuse, compulsive patterns of behavior which Horney calls aptly "a neurotic trend." However, in her emotional reaction against analysis Horney calls this process of frank self description "self analysis" and attributes to it a therapeutic leverage which it does not possess. It is of basic importance to realize this.

Furthermore, one must register another note of warning. The confrontation of patients with descriptive facts must be carefully dosed. No mistake is more frequently made than the premature confrontation of patients with facts which are difficult to absorb. Horney professes a strange and almost mystical confidence in a patient's capacity to measure his self dosage accurately and safely. This is a strange mistake for an experienced psychiatrist to make, when one contemplates the innumerable ways in which the unguided patient can use truth to his own injury.

So serious are these basic flaws in the book that they seem to the reviewer to outweigh entirely the value of the keen clinical descriptions which Horney as usual is capable of giving. In this book these descriptions are put to a particularly unfortunate use. This reviewer would be as full of praise as he is of criticism if Horney had contented herself with elaborating a description of compulsive behavior patterns and had she then written a series of technical articles on the use of a technic of discontinuous analyses with systematically planned periods of self description interspersed among periods of professionally guided analysis; and had she finally presented to her analytic and psychiatric colleagues a series of patients handled in this way, comparing the results achieved and the duration of treatment with patients treated by currently accepted methods of continuous professional analysis. Unfortunately, however, Horney has for some years written almost exclusively for the uncritical layman.

There are other flaws in the structure of the book. By omissions and by choosing certain quotations out of their context, Horney builds a distorted picture of the history of psychoanalytic psychiatry. She gives an incorrect picture of Freud's attitude toward the possibilities of self analysis as manifested in his analyses of his own dreams. Indeed, wherever she touches on a point of freudian theory she distorts it in order to be able to criticize it. To the reviewer this is particularly disturbing, because it is his conviction that Dr. Horney has made certain valuable critical challenges to weak points in analytical theory. Therefore it should be unnecessary for her to distort this theory merely for the sake of target practice. However, this is not the place for a detailed dissection of these criticisms or of the inner details of Horney's system or to contrast it with the freudian. It is fair to say, however, that before serious consideration can be given to Horney's point of view it must itself be purged of its own manifold and obvious scientific inconsistencies.

The Treatment of Burns. By Henry N. Harkins, M.S., M.D., Ph.D., Associate Surgeon, Henry Ford Hospital, Detroit. Cloth. Price, $6.50. Pp. 457, with 117 illustrations. Springfield, Illinois & Baltimore: Charles C Thomas, Publisher, 1942.

[The following part of this book review was inadvertently omitted from The Journal, July 25, in which the first part appears on page 1061.]

In part II there are chapters covering general treatment and its relation to local treatment, tanning methods of treatment, antiseptics, saline baths, other methods of treatment, early plastic procedures and late plastic reconstruction. In the discussions of local treatment, tannic acid or some modification of the tanning method is given preference. The contraindications and limitations of this method, however, are freely discussed. The advantages of alternate forms of treatment are presented. The importance of careful preliminary cleansing and removal of blisters as a basis for all forms of local therapy is emphasized. The author clearly indicates that the local treatment must be modified to suit the needs of the case and must be carried along with the systemic management in an orderly fashion. He emphasizes the extreme importance of intravenous transfusion, oxygen therapy and other systemic measures in severe burns. The need for blood transfusions in all stages of burn therapy is mentioned. There is a good discussion of the use of blood plasma. The chapter on early plastic surgical procedure is good. The author emphasizes the importance of early skin grafting on large granulating surfaces and gives detailed discussion of skin grafting methods. He makes the point that very thin Thiersch grafts do not give good results. Thick Ollier-Thiersch grafts, however, which the author calls small thick split grafts, will when properly cut and laid on good granulation tissue give a satisfactory result in most cases. They have the advantage of producing little or no mutilation of the donor site. The chapter on the late plastic treatment of burn defects is brief but fundamentally sound.

In part III the author gives a short chapter on the special features in burns of the scalp, eyes, face, hands and other areas of the body of unusual significance. There are also chapters on electrical and radiation burns, chemical burns and freezing.

Brief biographical sketches of the lives of Dupuytren, Curling, Underhill and Davidson are included as interesting historical features. Photographs and illustrations are excellent.

The author obviously has not written this book primarily for readers who wish to be told in a few words exactly how to treat burns. There is, however, a final chapter giving a practical outline for treatment. Dr. Harkins's book stands as the best available guide to the successful management of the severely burned patient. As the author states in the preface, the question of burn therapy is at the crossroads, and a decision as to the best type of local treatment may be reached in the near future. It is gratifying that he makes no effort to close the subject. As an aid and inspiration to further study and progress, the book is most valuable. With suitable revision it may stand as a masterpiece.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

FOLLICULITIS IN BRASS PLATING WORKERS

To the Editor:—**A new plating operation has been installed, and I have been confronted with a series of workmen suffering from pustular eruptions surrounding the hair follicles on forearms, wrists and hands; also any slight scratches in these regions become acutely inflamed with a tendency to infection. The face is seldom attacked; occasional nausea and epistaxis occur. The following materials are used in conjunction with the brass plating equipment. The process is outlined in the sequence of operation. All operators wear rubber gauntlet type gloves with coverall sleeves down to the wrists, inside the gauntlets. The cycle of operation is fully automatic and operators do not immerse their hands in any of the solutions. Cleaning: 1. Sun T. Mineral Oil (Sunoco Company). 2. International A. B. Cleaner (caustic trisodium phosphate). 3. Muriatic acid. 4. Sodium cyanide, sodium hydroxide solution. Plating solution: 5. Sodium cyanide, copper cyanide, zinc cyanide, sodium carbonate (possibility of very slight ammonia fumes involved in the process). Rinsing: 6. Concentrated lubricating soap solution: 7. Sawdust. Heavy duty fans exhaust the bulk of the fumes. It seems to me that the heavy rubber gauntlet gloves worn tend to aid in the production of this condition as a result of perspiration. I have used sulfathiazole-sulfanilamide ointment with good results. My question is for some means of preventing this condition and the possibility of better treatment.**

M.D., Ohio.

ANSWER.—From the description given, the condition on the hands and arms and wrists of these men is a folliculitis, probably a low grade pyogenic affair, perhaps from Staphylococcus aureus or albus or both. It is to be noted that the operators wear rubber gauntlet gloves and that their sleeves come down to the wrists inside the gauntlets. Presumably the gauntlets cover up to the middle of the forearm, so that perhaps part of the forearm affected is outside the gauntlet area. It is also noted that the operators do not immerse their hands in any of the solutions, but it would seem possible that some of the oil and other solutions might be splashed onto the coverall sleeves unless the operation is an entirely enclosed one. The oil and the alkali might perfectly well be factors in the causation of such an eruption, and the retention of perspiration by rubber gloves for an eight hour working period constitutes another hazard.

It is perhaps not feasible to dry clean-sterilize these coverall sleeves and sterilize the rubber gloves if there are many workmen. At the same time, without knowing more of the process, it would still seem advisable to continue with the coverall and glove protection rather than expose the bare skin. It would seem advisable to make use of a permanganate solution, 1 : 5,000, and even 1 : 3,000, for the immersion of hands previous to the beginning of each work period, perhaps allowing the solution to dry on before putting the hands into the gloves. Some such solution might reduce the surface bacteria and lessen the perspiration and maceration to a certain extent.

As far as actual therapy is concerned, if the sulfathiazole-sulfanilamide ointment is producing good results it would be best to continue with it for the present. As an alternate, a 4 per cent ammoniated mercury in boric ointment could be used. If any selection of employees is possible, it would seem advisable to transfer those who develop such an eruption to other work and replace them with individuals who might well have a more highly developed immunity to such organisms.

ERYTHEMA NODOSUM AND OCCUPATION

To the Editor:—**A patient working in the Celon Company comes in contact with triethanolamine, glycerin, acetic acid, caustic soda, hydrogen peroxide, beta-naphthol, AS naphthol and formaldehyde. I should like to know if any of these have ever been known to produce the clinical entity known as erythema nodosum, which was characterized by pain in his hips, fever, and varicolored nodules on his tibial surfaces.**

G. J. Maloof, M.D., Madison, Wis.

ANSWER.—The etiology of erythema nodosum, albeit obscure, sharply points away from industrial causes and instead to infection or the influence of infection, notably tuberculosis, syphilis, rheumatic fever and mycoses. By some, erythema nodosum is regarded as only a form of erythema multiforme. Of this Johnstone states "The physician should recognize that such skin disorders as . . . erythema multiforme . . . are practically never related to occupation." Although erythema nodosum has been linked with drug action, including iodides and bromides, these substances when constituting the possible offender were used therapeutically. Numerous factors connected with erythema nodosum militate against any industrial origin. Some such factors are the following:

Erythema nodosum occurs more frequently among women not industrially employed than among industrially employed males. The site of the cutaneous lesions do not conform to that commonly associated with occupational dermatitis. Erythema nodosum commonly is ushered in by constitutional features suggesting infection. The cutaneous lesions appear to develop deep in the integument, which is contrary to the occurrence of most contact dermatoses. One attack appears to confer immunity, or at least some resistance, which would be unlikely in the event of continued or resumed exposure to some industrial substance suspected as the cause.

Of the several chemicals mentioned, all are capable of inducing dermatoses under some circumstances, but not the type here described. Formaldehyde in particular may lead to an erythema but is not known to lead to an erythema nodosum. While disbelieving that this described erythema nodosum may represent any characteristic occupational disease, one may grant that many types of unfavorable work conditions, and particularly excessive wetness, might constitute a contributing factor to such cutaneous lesions.

CONTROL OF PAIN WITH COMBINED MORPHINE AND CODEINE

To the Editor:—**A woman aged 47 has been bedridden for twenty-three years with arthritis deformans. She presents a textbook picture of arthritis deformans, and this is exceedingly painful. She cannot bear the pressure of the bedclothing on her feet. She has run the gamut of treatment from salicylates to lights of all sorts, injections of almost everything, and diathermy, all with no results. It was necessary to give her morphine for her pain. The dose has never been increased for twenty-three years and is sufficient to ease her pain. Two prescriptions are being given: (1) morphine sulfate 10 grains (0.65 Gm.) and compound elixir of pepsin 4 ounces (120 cc.); elixir Lactopeptine 4 ounces. (2) codeine sulfate 10 grains and compound elixir of pepsin 4 ounces. Roughly she gets ⅙ grain (0.007 Gm.) of morphine sulfate and ¼ grain (0.016 Gm.) of codeine sulfate in each dose for four doses a day of the mixture of the two. This dose has never for twenty-three years been increased or decreased. For the night she is given one ¼ grain tablet of scopolamine, cactin and morphine by hypodermic. She is an addict through necessity. She has never had nausea or any of the symptoms of morphine poisoning. Her pupils are contracted. There is no constipation, nor does there appear to be a craving for the drugs, perhaps because her medicine is always given on time. Yet in between doses there is no craving. She has good appetite, and elimination is normal. In carcinoma, tabes and other painful incurable diseases, once you start morphine therapy, you have to increase the dose constantly. But in this case ⅙ grain of morphine sulfate and ¼ grain of codeine sulfate appears to have been sufficient for twenty-three years. Is there anything in the combination of morphine sulfate and codeine sulfate that will lessen the craving for the narcotics and do away with the unfavorable results of morphine sulfate and codeine sulfate when taken separately?**

M.D., New York.

ANSWER.—Since the inquirer points out that the prescription containing morphine and codeine sulfate (which is given four times a day) would supply a total daily dose of approximately ½ grain of morphine sulfate and 1 grain of codeine sulfate (which is supplemented with an additional ¼ grain of morphine sulfate at bed time), which has not varied over a period of twenty-three years, it is not surprising that addiction to opiates has resulted. The fact that the patient has had no craving is also not surprising in view of the regularity with which the prescription has been administered. Tolerance does not occur uniformly to all the manifestations of morphine action but occurs only with the depressant effects on the nervous system—analgesia and stupefaction. Tolerance does not occur to the excitatory responses elicited by the opium alkaloids. Thus the true addict may continue to obtain stimulation without increase in the dosage, even though the depressant and analgesic effects are lessened if the dosage is not increased. Cross tolerance also exists between the various phenanthrene akaloids of opium, so that a person tolerant to morphine in also tolerant to dilaudid, codeine and heroin. Addiction to codeine occurs, and addicts to this alkaloid experience stimulation even though it is well known that this alkaloid lacks the serious addicting property in the same doses required for morphine. In view of the fact that the patient has had arthritis deformans for many years and is now well beyond the acute stage in which the pain factor was probably more intense, it seems likely that the same dose of morphine and codeine sulfate together continue to allay her craving for the stimulant effects of these alkaloids (to which tolerance has not developed), so that the analgesic effects (to which tolerance does occur) are no longer needed to make the patient comfortable. This seems the most likely

explanation. However, the inquirer can determine more accurately the need for continuing the morphine and codeine prescription by gradually decreasing the dose and by eventually substituting a placebo or another analgesic if this is necessary. There is no evidence to support the view that a combination of morphine and codeine sulfate is less habit forming than morphine alone if doses are adjusted to supply equivalent analgesic effects: for example, by subcutaneous injection 64 mg. of codeine sulfate is required to produce the same analgesic effect as 10 mg. of morphine sulfate.

"SUN PAIN" IN CHRONIC MALARIA

To the Editor:—**Is there such a thing as "sun pain," i. e. headache, for a period of twenty days due solely to malaria without a history of chills and fever and without temperature in excess of normal at the time of pain?**

M.D., West Virginia.

ANSWER.—Yes. Malaria in the atypical chronic form may be considered as one of the possible causes of the persistent headache following exposure to the activating influence of the sun's rays.

The symptoms as related in the query, however, do not present distinguishing characteristics of malaria, in contrast with many other chronic conditions such as refractive errors, vitamin deficiencies, reflex disturbances and focal infections.

If in this case there occurred periodic abrupt seizures beginning near midday or definite exacerbations of the symptoms reported as following exposure to the sun, with tertiary or with "septenary" (seven day) periodicity, the case would suggest strongly a cerebral (perhaps ocular) malaria.

A diagnosis of malaria in such cases may sometimes be made by employing a therapeutic test consisting in administration of specific remedies. Symptomatic control may be obtained by prolonged follow-up treatment consistent with the persistent relapsing nature of the disease. References:

Craig, C. F., and Faust, E. C.: Clinical Parasitology, Philadelphia, Lea & Febiger, 1940.

Fondé, G. H., and Fondé, E. C.: Chronic Malaria: A Clinical Consideration, *Arch. Int. Med.* **64**: 1156 (Dec.) 1939.

PERSISTENT POSITIVE SEROLOGIC REACTION IN A SYPHILITIC PATIENT SENSITIVE TO ARSENICALS

To the Editor:—**In 1937 a woman aged 48 was found to have a positive Kahn reaction. Nine months previously she had had a severe sore throat, which lasted five days. There had been no history of a primary lesion or cutaneous rash. She was given six doses of bismuth subsalicylate in oil at weekly intervals, followed by one dose of 0.3 Gm. of neoarsphenamine and a second dose of 0.6 Gm. four days later. She developed salmon colored, scaly skin lesions varying in size from 1 to 3 cm. in diameter on all parts of the body. It was necessary to stop all treatment for four weeks. She was then given 1 cc. of bismuth subsalicylate in oil each week for sixteen months, accompanied by potassium iodide orally. During this time several attempts were made to use neoarsphenamine, sulfarsphenamine and mapharsen, later on both with and without 400 mg. of ascorbic acid daily, a dermatitis being produced each time they were tried. During March and April 1939 she received injections of mercury elsewhere. From May 1939 to January 1940 she was given weekly doses of the bismuth compound. Treatment was stopped during 1940. Because of the development of induration in the lower part of the rectum, treatment was resumed in February 1941 and has been continuous since that time. Bismuth subsalicylate, thiobismol and iodobismitol have been used. The soluble bismuth preparations were given twice each week. The Kahn test has been positive at all times. The spinal fluid taken recently contained four cells, there was no increase of globulin, the colloidal gold curve was normal and the Kahn reaction was negative. Fluoroscopy shows no aneurysm. There is no evidence of skeletal involvement. There are no neurologic signs. It seems to me that this patient has received a more than adequate amount of bismuth and iodides. What further treatment should be given? Can you suggest any procedure by which the serologic test can be reversed? Is the persistence of a positive Kahn reaction in the absence of anything else of any importance?**

M.D., Colorado.

ANSWER.—This patient, according to the data furnished, has received more than one hundred injections of bismuth preparations. In view of her sensitivity to arsenic, her age, the negative spinal fluid examination, the negative cardiovascular check and the fact that she is otherwise asymptomatic, there are two courses to pursue: (1) Discontinue treatment entirely and place her on parole, checking her once a year, or (2) give two courses of insoluble bismuth a year for the next two years, giving twelve injections to the course.

The persistence of the positive serologic test in itself has no special significance. However, it is advisable to observe the patient for several years longer to make certain that she remains asymptomatic. There is no special treatment that will assuredly reverse the serologic reaction in patients with latent syphilis.

DETERMINATION OF THE DATE OF OVULATION BY AN ELECTRIC POTENTIOMETER

To the Editor:—**In J. P. Greenhill's Office Gynecology", third edition, page 157, I read that with the help of the electric potentiometer one can determine accurately the date of ovulation. Could you please verify this statement and give me details of the technic used?**

A. L. de Guevara, M.D., Guadalajara, Jalisco, Mexico.

ANSWER.—Burr, Hill and Allen (*Proc. Soc. Exper. Biol. & Med.* **33**:109 [Oct.] 1935) reported that with ovulation in the rabbit there was an increase in the difference in potentials between two electrodes, one placed above the symphysis and the other in the vagina. Reboul, Friedgood and Davis (*Am. J. Physiol.* **119**:387 [July] 1937) claimed that this change in biopotentials was synchronous with ovulation. Burr, Musselman, Barton and Kelly (*Science* **86**:312 [Oct. 1] 1937) reported the same phenomena in a woman, as did Rock, Reboul and Wiggers (*New England J. Med.* **217**:654 [Oct. 21] 1937). Barton (*Yale J. Biol. & Med.* **12**:335 [March] 1940) claimed that wide changes in the difference of potentials between two index fingers indicated ovulation; but Rock (*New England J. Med.* **225**: 910 [Dec. 4] 1941) maintains that "finger to finger potentials" have no relation whatever to ovulation. Rock believes that, like basal body temperatures and vaginal smears, biopotentials may be affected by ovulation but not in such a critically peculiar way as to indicate ovulation and therefore, like other methods, cannot be used clinically to detect this significant event.

An illustration of the apparatus used in making a bioelectric record and the technic of the procedure may be found in an article by Burr, Musselman, Barton and Kelly (*Yale J. Biol. & Med.* **10**:155 [Dec.] 1937.

ROUTINE SEROLOGIC TESTS IN HOSPITALS

To the Editor:—**What is the advisability of making routine blood Kahn or Kline tests on all patients, including private, obstetric, medical, surgical and pediatric? Are hospitals running routine Kahn tests on private patients or waiting until individual physicians order them?**

Sister Ann, Superintendent, St. Mary's Hospital, Detroit.

ANSWER.—The use of serologic tests routinely on all hospital admissions has during late years become common practice. At the University of Michigan Hospital, for example, a Kahn test is part of the registration of all patients, including private, in all the services, both inpatients and outpatients. Blood specimens, obtained when the patients register, are sent directly to the serologic laboratory and the results are reported by the laboratory to the respective services in which the patients seek medical or surgical aid. In accordance with this plan, physicians are able to have the serologic reports on their patients at the time of the examination.

In some hospitals, blood testing is part of routine hospital procedure on all patients actually admitted to the hospital. In isolated instances in which a patient objects to having a blood test, the matter is left to his physician.

The tendency during late years has been to extend the use of blood tests in private and hospital practice. This fact alone would indicate that physicians desire to have a serologic report as part of the medical record of each of their patients.

THE RELATIVE VALUE OF SULFONAMIDES IN STREPTOCOCCIC INFECTIONS

To the Editor:—**Will you please tell me the value of sulfathiazole and also sulfadiazine as compared with sulfanilamide in the treatment of streptococcic infections? I understand that sulfathiazole and sulfadiazine are probably better for pneumococcic infections than the sulfanilamide, but what is the comparative value of the three preparations for streptococcic infections?**

M.D., Mississippi.

ANSWER.—It is still too soon to evaluate the relative merits of various sulfonamide drugs in different types of infections. In general, however, sulfanilamide is the first choice of many experienced observers for the treatment of streptococcic infections (Lockwood, J. S.: Sulfanilamide in Surgical Infections, THE JOURNAL, Oct. 5, 1940, p. 1190. Chemotherapy for Infectious Diseases and Other Infections, *ibid.* Feb. 8, 1941, p. 513. Long, P. H.: *Bull. New York Acad. Med.* **16**:732 [Dec.] 1940). Sulfathiazole, while appearing to have considerable value in staphylococcic infections, does not seem to be as effective in streptococcic infections, although Epstein found it effective in streptococcic impetigo (Epstein, Stephan: Impetigo Contagiosa, *Wisconsin M. J.* **40**:383 [May] 1941). Not enough reports are in as yet to determine the efficacy of sulfadiazine in streptococcic infections.

PARAESTHESIA OF SENSE OF TASTE AFTER TONSILLECTOMY

To the Editor:—Following tonsillectomy under general anesthesia a patient developed a shaggy patch in the center of the tongue and disturbances and diminution of the sense of taste. A neurologist tells me that it would be impossible to cut the nerves of taste during a tonsillectomy. Would traction on the tongue be the probable cause of this damage to the lingual nerves?

R. P. Little, M.D., New York.

ANSWER.—Tonsillectomy may be followed by a variety of disturbances in sensation affecting the tongue and pharynx, among which one occasionally observes a paresthesia of the sense of taste. It is more than likely that the cause lies not in any damage to the lingual nerve but rather to fibers of the glossopharyngeal since these supply the posterior third of the tongue with the special sense of taste in addition to supplying sensory fibers to a good portion of the operative field. Also trophic disturbances have been observed as the result of damage to the sympathetic fibers. Most of these paresthesias disappear in time, since the damaged fibers usually regenerate. If the postoperative scarring is extensive, the ultimate recovery may be long delayed.

PTYALISM IN INFANT

To the Editor:—A boy aged 1 year, who is tongue tied, has hyperfunction of the salivary glands while awake but not at night. The bibs are copiously saturated throughout the day. He has nine teeth and a good appetite, and he takes vitamins A, B, C, and D. Please give me your opinion and suggestions.

L. P. Diehl, M.D., Woodsfield, Ohio.

ANSWER.—Hypersecretion, or ptyalism, results from a wide variety of conditions, such as teething, inflammatory conditions of the mouth and throat, cretinism and idiocy, poisoning especially that of mercury, and functional nervous disturbances. In other instances there is only an apparent increase because the saliva is not swallowed. In the case mentioned the tongue tie has no influence. As the infant is apparently normal and healthy and does not have the difficulty at night, it might be presumed that the baby does not swallow its saliva when awake, allowing the excess to drool out of his mouth.

If the condition becomes very troublesome, atropine in therapeutic doses for an infant 1 year of age, administered several times during the day, may diminish the secretion of saliva.

POSSIBLE BUERGER'S DISEASE

To the Editor:—A man aged 36 noted five years ago a small round red spot on the calf of the right leg over one of the veins. This progressed slowly over the leg in the course of many months. He was given various forms of treatment without relief. The condition extended above the knee. Ligation of the saphenous vein was done, after which red spots broke out in a number of points over the entire leg, including the thigh. One spot appeared about the point of ligation, and another vein was ligated. The process was stationary until about three months ago, at which time a similar spot appeared on the other leg, anteriorly just below the knee. This progressed down a vein almost to the ankle, then struck an anastomosis and started up the anastomosing branch; it progresses about 1 inch (2.5 cm.) in ten days. It never gets very sore, there is never much swelling, and thrombosis seems to occur behind it; but complete healing with complete disappearance of any abnormality occurs within ten days to two weeks behind the progressing spot of redness. Wearing a pressure bandage has helped some. Attempts have been made to produce thrombosis of the involved vein ahead of the site of the inflammation but have not been successful. This condition seems to be a progressive phlebothrombosis. There is no evidence of endarteritis. Is the condition likely to involve the end arteries? What treatment should be given?

Duncan C. McKeever, M.D., Houston, Texas.

ANSWER.—A young man with migrating phlebitis should always be suspected of having Buerger's disease. Even if all the arteries of the foot are pulsating, excessive sweating, early myocardial damage and the absence of one of the radial pulses may point to a more general vascular involvement. The sedimentation rate and the coagulation time should be investigated to estimate the activity of the process and the possibly increased tendency to thrombosis.

Smoking should be absolutely forbidden. Adequate salt and water intake must be maintained. Twelve injections of sodium thiosulfate, given twice weekly, often help the disappearance of phlebitic patches. Obvious foci of infection should be eradicated. Heparin can be administered during the acute attacks. Even so, the phlebitic process may spread gradually into the arterial tree. It would be wise to obtain the help and advice of a consultant in vascular disease, as patients with the condition may have thrombi in various viscera and sometimes die of pulmonary embolism.

UNUSUAL REACTION TO SHORT WAVE EXPOSURE

To the Editor:—A young healthy white man who was exposed to the radiation from uncovered aerial feeders of an ultra high frequency transmitter of approximately 2.5 meter wavelength for about five minutes complained of a feeling of numbness all over his body. He also felt chilled and "as if he were drunk." The numbness and chilliness disappeared immediately after cessation of exposure; the feeling of inebriation took from a half to three quarters of an hour to wear off. Are there any records of similar reactions to ultra high frequency radiations?

M.D., New York.

ANSWER.—As far as can be determined, there is no report of similar reactions by persons exposed to radiation of such extremely short wavelengths. Some observers have noted unusual symptoms in persons who were exposed to short radio waves of 6 meter wavelength or longer, but for the most part these observations have not been confirmed elsewhere. Schliephake mentioned that persons who remain for a long time in a short wave diathermy field may be subject to certain disturbances of the nervous system, which he listed as "a desire to sleep," "a high degree of enervation and prostration," "intensive headaches" and "digestive disturbances." Krusen stated that his clinical observations over a number of years had never revealed any of the effects on the nervous system claimed by Schliephake; and in no instance, even on one occasion after exposure of a patient's hand to a wavelength of 6 meters for eight hours daily for five days, were any untoward reactions noted. It seems surprising with exposure of only five minutes to a 2.5 meter wavelength that the rather amazing symptoms which are mentioned would be produced.

References:

Schliephake, Erwin: Human Beings as Antennas, Physical Therapy **49**: 418 (Nov.) 1931.

Krusen, F. H.: Physical Medicine, Philadelphia, W. B. Saunders Company, 1941.

SULFATHIAZOLE AND CUTANEOUS ERUPTION

To the Editor:—A patient with malaria who was treated with quinine received one month after treatment 2 Gm. of sulfapyridine a day for a fever of undetermined origin. Two weeks afterward the febrile symptoms recurred and he was given sulfathiazole, after which he had a slight rash. After a further four weeks he was given a large dose of sulfapyridine, as he had a perisplenic abscess and the surgeon considered an operation inadvisable because of the patient's condition. The abscess has healed, but the patient had and has still, three months later, a painful rash. When exposed to sunlight the rash becomes more pronounced, but it is less noticeable on rainy days. It does not irritate but is painful to touch and is worst on the legs, arms and neck. I should be glad to know whether this rash can be expected to disappear by itself or whether there is a possible cure for it.

L. Provo Kluit, M.D., New York.

ANSWER.—The first eruption noted was apparently due to sulfathiazole. The second eruption, which has persisted, suggests erythema nodosum, as the lesions are tender and situated on the legs, arms and neck. This most probably is not due to any of the sulfonamide drugs, as the type of eruption caused by them is usually of short duration. The splenic abscess mentioned might well have acted as a focus of infection and caused the eruption. If erythema nodosum is the correct diagnosis the prognosis is good, as the disease disappears spontaneously.

PERSISTING NONDIPHTHERITIC VAGINITIS IN CHILD

To the Editor:—A girl aged 9 years has vaginitis of two years' duration. The cervix is normal. Repeated smears show diphtheria or diphtheroid organisms which are inactive on inoculation. Schick tests have given negative results. Would there be any reason for giving diphtheria antitoxin in a therapeutic dose at this time, or would you suggest any local treatment relating to diphtheria antitoxin? The discharge is profuse, and the labia become excoriated from it. I believe that all local treatments accepted in general practice have been used on this girl in the past two years. I shall appreciate your interest in the matter.

M.D., Indiana.

ANSWER.—Diphtheroid organisms are frequently a part of the normal vaginal flora. Since they do not produce diphtheria toxin, as the inquirer has demonstrated by animal inoculation, results are not expected from the use of diphtheria antitoxin.

Persisting nongonorrheal vaginitis is frequently associated with persisting infection elsewhere, especially in the nose and throat. In that case, relief of the original infection often relieves the vaginal symptoms. Another common cause is local irritation; this may arise from tightness of the underwear, obesity with heavy vulval pads, masturbation, the presence of a foreign body in the vagina and, probably most important, too much local treatment.